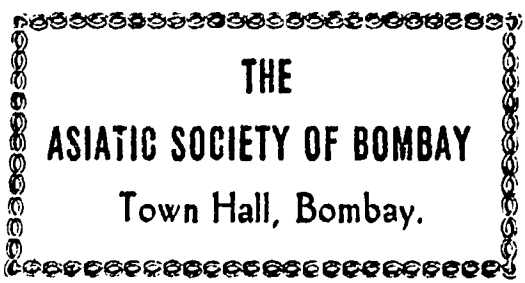
00022886



Digitized with financial assistance from

HT Parekh
FOUNDATION

An Initiative by
HDFC
WITH YOU, RIGHT THROUGH

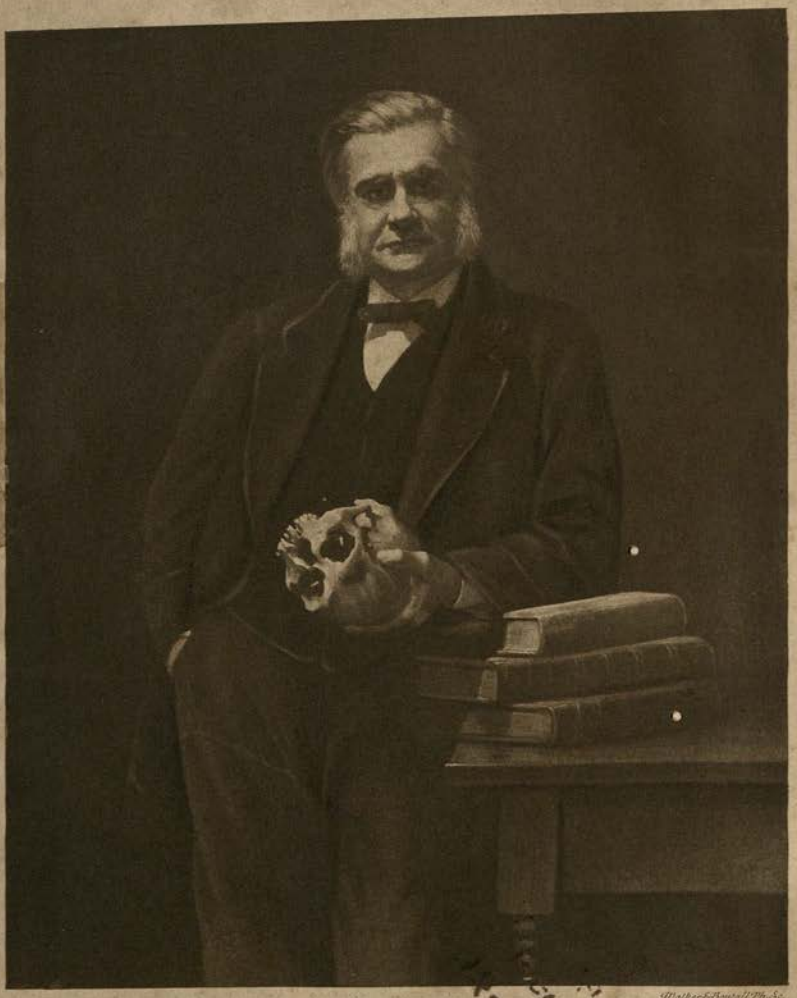
on 28 December, 2018

00022886

LIFE AND LETTERS

OF

THOMAS HENRY HUXLEY



Walker & Boutall Photo. Sc.

T. H. Huxley
after the painting by the Hon. John Collier
in the National Portrait Gallery. 1883.

LIFE AND LETTERS

OF

IOMAS HENRY HUXLEY

921

BY HIS SON

LEONARD HUXLEY

22836
a2

IN TWO VOLUMES

VOL. II

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

Y Y 4-17

London
MACMILLAN AND CO., LIMITED
1900

925.74
Hux/Hux/Lif
22886

CONTENTS

CHAP.		PAGE
I.	(1879)	1
II.	(1881)	20
III.	(1882)	37
IV.	(1883)	48
V.	(1884)	65
VI.	(1884–1885)	78
VII.	(1885)	103
VIII.	(1886)	121
IX.	(1886)	137
X.	(1887)	150
XI.	(1887)	169
XII.	(1888)	186
XIII.	(1888)	201
XIV.	(1889)	216
XV.	(1889)	237
XVI.	(1890–1891)	258
XVII.	(1890–1891)	277
XVIII.	(1892)	296
XIX.	(1892)	318
XX.	(1892)	330
XXI.	(1893)	344
XXII.	(1894)	371
XXIII.	(1895)	395

CHAP. PAG

XXIV. 40

XXV. (1895) 42

APPENDIX I. 44

APPENDIX II. 45

APPENDIX III. 45

APPENDIX IV. 47

INDEX 47

LIST OF ILLUSTRATIONS

Portrait after the Painting by the Hon. John Collier in the National Portrait Gallery, 1883 . . .	*Frontispiece*		
Portrait from a Photograph by H. Huxley, about 1881	*To face page*		16
Portrait from a Photograph by Downey, 1890 . .	„	„	256
The Study at Hodeslea—from a Water-colour by Reginald Barrett	„	„	277
Portrait from a Photograph by Mayall, 1893 . .	„	„	352
Facsimile of a Sketch, *Pithecanthropus erectus* . .	„	„	394
Portrait with his Grandson, from a Photograph by Kent and Lacey, 1895	„	„	435

ERRATA

Page 18, line 33, *for* moral *read* mortal.
„ 81, „ 13, „ strikes *read* stinks.
„ 233, „ 17, „ in the walls *read* on the walls.
„ 279, „ 2, „ or *read* on.
„ 299, „ 31, „ capitulate *read* recapitulate.

CHAPTER I

1879

MUCH of the work noted down for 1878 reappears in my father's list for 1879. He was still at work upon, or meditating his Crayfish, his Introduction to Psychology, the Spirula Memoir, and a new edition of the Elementary Physiology. Professor H. N. Martin writes about the changes necessary for adapting the "Practical Biology" to American needs; the article on Harvey was waiting to be put into permanent form. Besides giving an address at the Working Men's College, he lectured on Sensation and the Uniformity of the Sensiferous Organs (*Coll. Ess.* vi.), at the Royal Institution, Friday evening, March 7; and on Snakes, both at the Zoological Gardens, June 5, and at the London Institution, Dec. 1. On February 3 he read a paper at the Royal Society on "The Characters of the Pelvis in the Mammalia, and the Conclusions respecting the Origin of Mammals which may be based on them"; and published in *Nature* for November 6 a paper on "Certain Errors Respecting the Structure of the Heart, attributed to Aristotle."

Great interest attaches to this paper. He had always wondered how Aristotle, in dissecting a heart, had come to assert that it contained only three chambers; and the desire to see for himself what stood in the original, uncommented on by translators who were not themselves anatomists, was one of the chief reasons (I think the wish to read the Greek Testament in the original was another) which operated in making him take up the study of Greek late in middle life. His practice was to read in his book until he had come to

ten new words; these he looked out, parsed, and wrote down together with their chief derivatives. This was his daily portion.

When at last he grappled with the passage in question, he found that Aristotle had correctly described what he saw under the special conditions of his dissection, when the right auricle actually appears as he described it, an enlargement of the "great vein." So that this, at least, ought to be removed from the list of Aristotle's errors. The same is shown to be the case with his statements about respiration. His own estimate of Aristotle as a physiologist is between the panegyric of Cuvier and the depreciation of Lewes, "he carried science a step beyond the point at which he found it; a meritorious, but not a miraculous, achievement." And it will interest scholars to know that from his own experience as a lecturer, Huxley was inclined to favour the theory that the original manuscripts of the *Historia Animalium*, with their mingled accuracy and absurdity, were notes taken by some of his students. This essay was reprinted in *Science and Culture*, p. 180.

This year he brought out his second volume of essays on various subjects, written from 1870 to 1878, under the title of *Critiques and Addresses*, and later in the year, his long-delayed and now entirely recast *Introductory Primer* in the Science Primer Series.

6 BARNEPARK TERRACE, TEIGNMOUTH,
Sept. 12, 1879.

MY DEAR ROSCOE,—I send you by this post my long-promised Primer, and a like set of sheets goes to Stewart.[1]

You will see that it is quite different from my first sketch, Geikie's primer having cut me out of that line—but *I* think it much better.

You will see that the idea is to develop Science out of common observation, and to lead up to Physics, Chemistry, Biology, and Psychology.

I want the thing to be good as far as it goes, so don't spare criticism.—Ever yours very faithfully, T. H. HUXLEY.

Best remembrances from us all, which we are jolly.

[1] Balfour Stewart, Professor of Natural Philosophy in Owens College, Manchester.

To his other duties he now added that of a Governor of Eton College, a post which he held till 1888, when, after doing what he could to advance progressive ideas of education, and in particular, getting a scheme adopted for making drawing part of the regular curriculum, ill-health compelled him to resign.

As for other pressure of work (he writes to Dr. Dohrn, February 16), with the exception of the Zoological Society, I never have anything to do with the affairs of any society but the Royal now—I find the latter takes up all my disposable time. . . . Take comfort from me. I find 53 to be a very youthful period of existence. I have been better physically, and worked harder mentally, this last twelvemonth than in any year of my life. So a mere boy, not yet 40 like you, may look to the future hopefully.

From about this time dates the inception of a short-lived society, to be called the Association of Liberal Thinkers. It had first taken shape in the course of a conversation at Prof. W. K. Clifford's house; the chief promoter and organiser being a well-known Theistic preacher, while on the council were men of science, critics, and scholars in various branches of learning. Huxley was chosen President, and the first meeting of officers and council took place at his house on January 25.

Professor G. J. Romanes was asked to join, but refused on the ground that even if the negations which he supposed the society would promulgate, were true, it was not expedient to offer them to the multitude. To this Huxley wrote the following reply (January 2, 1879):—

Many thanks for your letter. I think it is desirable to explain that our Society is by no means intended to constitute a propaganda of negations, but rather to serve as a centre of free thought.

Of course I have not a word to say in respect of your decision. I quite appreciate your view of the matter, though it is diametrically opposed to my own conviction that the more rapidly truth is spread among mankind the better it will be for them.

Only let us be sure that it is truth.

However, a course of action was proposed which by no means commended itself to several members of the council. Tyndall begs Huxley "not to commit us to a venture of the kind unless you see clearly that it meets a public need, and

that it will be worked by able men," and on February 6 the latter writes—

After careful consideration of the whole circumstances of the case, I have definitely arrived at the conclusion that it is not expedient to go on with the undertaking.

I therefore resign my Presidency, and I will ask you to be so good as to intimate my withdrawal from the association to my colleagues.

In spite of having long ago "burned his ships" with regard to both the great Universities, Huxley was agreeably surprised by a new sign of the times from Cambridge. The University now followed up its recognition of Darwin two years before, by offering Huxley an honorary degree, an event of which he wrote to Professor Baynes on June 9 :—

I shall be glorious in a red gown at Cambridge to-morrow, and hereafter look to be treated as a PERSON OF RESPECTABILITY.

I have done my best to avoid that misfortune, but it's of no use.

A curious coincidence occurred here. Mr. Sandys, the public orator,[1] in his speech presenting him for the degree, picked out one of his characteristics for description in the Horatian phrase, "Propositi tenax." Now this was the family motto; and Huxley wrote to point out the coincidence :—

[1] The speech delivered by the public orator on this occasion (June 10, 1879) ran as follows :—Academi inter silvas qui verum quaerunt, non modo ipsi veritatis lumine vitam hanc umbratilem illustrare conantur, sed illustrissimum quemque veritatis investigatorem aliunde delatum ea qua par est comitate excipiunt. Adest vir cui in veritate exploranda ampla sane provincia contigit, qui sive in animantium sive in arborum et herbarum genere quicquid vivit investigat, ipsum illud vivere quid sit, quali ex origine natum sit; qui exquirit quae cognationis necessitudo inter priores illas viventium species et has quae etiam nunc supersunt, intercedat. Olim in Oceano Australi, ubi rectis "oculis monstra natantia" vidit, victoriam prope primam, velut alter Perseus, a Medusa reportavit; varias deinceps animantium formas quasi ab ipsa Gorgone in saxum versas sagacitate singulari explicavit; vitae denique universae explorandae vitam suam totam dedicavit. Physicorum inter principes diu honoratus, idem (ut verbum mutuemur a Cartesio illo cujus laudes ipse in hac urbe quondam praedicavit) etiam "metaphysica" honore debito prosecutus est. Illum demum liberaliter educatum esse existimat qui cum ceteris animi et corporis dotibus instructus sit, tum praesertim quicquid turpe sit oderit, quicquid sive in arte sive in rerum natura pulchrum sit diligat; neque tamen ipse (ut ait Aristoteles) "animalium parum pulchrorum contemplationem fastidio puerili reformidat"; sed in perpetua animantium serie hominis vestigia perscrutari conatus, satis ampla liberalitate in universa rerum natura "humani nihil a se alienum putat." Duco ad vos virum intrepidum, facundum, propositi tenacem, Thomam Henricum Huxley.

SCIENCE AND ART DEPARTMENT,
SOUTH KENSINGTON, *June* 11, 1879.

MY DEAR MR. SANDYS—I beg your acceptance of the inclosed photograph, which is certainly the best ever executed of me.

And by way of a memento of the claim which you established not only to the eloquence but also the insight of a prophet, I have added an impression of the seal with "Tenax propositi" writ plain, if not large. As I mentioned to you, it belonged to my eldest brother, who has been dead for many years. I trust that the Heralds' College may be as well satisfied as he was about his right to the coat of arms and crest.

My own genealogical inquiries have taken me so far back that I confess the later stages do not interest me.—Ever yours very faithfully, T. H. HUXLEY.

The British Association met at Sheffield in 1879, and Huxley took this occasion to "eat the leek" in the matter of Bathybius (see vol. i. p. 296). It must be remembered that his original interpretation of the phenomenon did not involve any new theory of the origin of life, and was not put forward because of its supposed harmony with Darwin's speculations.[1]

In supporting a vote of thanks to Dr. Allman, the President, for his address, he said (see *Nature*, Aug. 28, 1879):—

I will ask you to allow me to say one word rather upon my own account, in order to prevent a misconception which, I think, might arise, and which I should regret if it did arise. I daresay that no one in this room, who has attained middle life, has been so fortunate as to reach that age without being obliged, now and then, to look back upon some acquaintance, or, it may be, intimate ally of his youth, who has not quite verified the promises of that youth. Nay, let us suppose he has done quite the reverse, and has become a very questionable sort of character, and a person whose acquaintance does not seem quite so desirable as it was in those young days; his

[1] "That which interested me in the matter was the apparent analogy of *Bathybius* with other well-known forms of lower life, such as the plasmodia of the Myxomycetes and the Rhizopods. Speculative hopes or fears had nothing to do with the matter; and if *Bathybius* were brought up alive from the bottom of the Atlantic to-morrow, the fact would not have the slightest bearing, that I can discern, upon Mr. Darwin's speculations, or upon any of the disputed problems of biology. It would merely be one elementary organism the more added to the thousands already known." (*Coll. Ess.* v. 154.)

way and yours have separated; you have not heard much about him; but eminently trustworthy persons have assured you he has done this, that, or the other; and is more or less of a black sheep, in fact. The President, in an early part of his address, alluded to a certain thing—I hardly know whether I ought to call it a thing or not—of which he gave you the name Bathybius, and he stated, with perfect justice, that I had brought that thing into notice; at any rate, indeed, I christened it, and I am, in a certain sense, its earliest friend. For some time after that interesting Bathybius was launched into the world, a number of admirable persons took the little thing by the hand, and made very much of it, and as the President was good enough to tell you, I am glad to be able to repeat and verify all the statements, as a matter of fact, which I had ventured to make about it. And so things went on, and I thought my young friend Bathybius would turn out a credit to me. But I am sorry to say, as time has gone on, he has not altogether verified the promise of his youth.

In the first place, as the President told you, he could not be found when he was wanted; and in the second place, when he was found, all sorts of things were said about him. Indeed, I regret to be obliged to tell you that some persons of severe minds went so far as to say that he was nothing but simply a gelatinous precipitate of slime, which had carried down organic matter. If that is so, I am very sorry for it, for whoever may have joined in this error, I am undoubtedly primarily responsible for it. But I do not know at the present time of my own knowledge how the matter stands. Nothing would please me more than to investigate the matter afresh in the way it ought to be investigated, but that would require a voyage of some time, and the investigation of this thing in its native haunts is a kind of work for which, for many years past, I have had no opportunity, and which I do not think I am very likely to enjoy again. Therefore my own judgment is in an absolute state of suspension about it. I can only assure you what has been said about this friend of mine, but I cannot say whether what is said is justified or not. But I feel very happy about the matter. There is one thing about us men of science, and that is, no one who has the greatest prejudice against science can venture to say that we ever endeavour to conceal each other's mistakes. And, therefore, I rest in the most entire and complete confidence that if this should happen to be a blunder of mine, some day or other it will be carefully exposed by somebody. But pray let me remind you whether all this story about Bathybius be right or wrong, makes not the slightest difference to the general argument of the remarkable address put before you to-night. All the statements your President has made are just as true, as profoundly true, as if this little eccentric Bathybius did not exist at all.

Several letters of miscellaneous interest may be quoted.

The following acknowledges the receipt of *Essays in Romance*:—

4 MARLBOROUGH PLACE, LONDON, N.W.,
January 1879.

MY DEAR SKELTON—Being the most procrastinating letter-writer in existence, I thought, or pretended to think, when I received your *Essays in Romance* that it would not be decent to thank you until I had read the book. And when I had done myself that pleasure, I further pretended to think that it would be much better to wait till I could send you my Hume book, which, as it contains a biography, is the nearest approach to a work of fiction of which I have yet been guilty.

The "Hume" was sent, and I hope reached you a week ago, and as my conscience just now inquired in a very sneering and unpleasant tone whether I had any further pretence for not writing on hand, I thought I might as well stop her mouth at once.

You will see oddly enough that I have answered your question about dreams in a sort of way on page 96.[1]

You will get nothing but praise for your book, and I shall be vilipended for mine. Is that fact, or is it not an evidence of a special Providence and Divine Government?

Pray remember me very kindly to Mrs. Skelton. I hope your interrupted visit will yet become a fact. We have a clean bill of health now.—Ever yours very faithfully, T. H. HUXLEY.

SCOTTISH UNIVERSITY COMMISSION, 31 QUEEN STREET, EDINBURGH, *April* 2, 1879.

MY DEAR SKELTON—I shall be delighted to dine with you on Wednesday, and take part in any discussion either moral or immoral that may be started.—Ever yours very faithfully,

T. H. HUXLEY.

March 15, 1879.

MY DEAR MRS. TYNDALL—Your hearty letter is as good as a bottle of the best sunshine. Yes, I will lunch with you on Friday with pleasure, and Jess proposes to attend on the occasion. . . . Her husband is in Gloucester, and so doesn't count. The absurd creature declares she must go back to him on Saturday—stuff and sentiment. She has only been here six or seven weeks. There is nothing said in Scripture about a wife cleaving to her husband!—With all our loves, ever yours very sincerely,

T. H. HUXLEY.

[1] Cp. *Essays in Romance*, p. 329; Huxley's *Hume*, p. 96.

The next is to his son, then at St. Andrews University, on winning a scholarship tenable at Oxford.

SOUTH KENSINGTON, *April* 21, 1879.

MY DEAR BOY—I was very glad to get your good news this morning, and I need not tell you whether M—— was pleased or not.

But the light of nature doth not inform us of the value and duration of the "Guthrie"—and from a low and material point of view I should like to be informed on that subject. However, this is "mere matter of detail" as the Irishman said when he was asked *how* he had killed his landlord. The pleasure to us is that you have made good use of your opportunities, and finished this first stage of your journey so creditably.

I am about to write to the Master of Balliol for advice as to your future proceedings. In the meanwhile, go in for the enjoyment of your holiday with a light heart. You have earned it.—Ever your loving father, T. H. HUXLEY.

The following, to Mrs. Clifford, was called forth by a hitch in respect to the grant to her of a Civil List pension after the death of her husband:—

4 MARLBOROUGH PLACE,
July 19, 1879.

MY DEAR LUCY—I am just off to Gloucester to fetch M—— back, and I shall have a long talk with that sage little woman over your letter.

In the meanwhile keep quiet and do nothing. I feel the force of what you say very strongly—so strongly, in fact, that I must morally ice myself and get my judgment clear and cool before I advise you what is to be done.

I am very sorry to hear you have been so ill. For the present dismiss the matter from your thoughts and give your mind to getting better. Leave it all to be turned over in the mind of that cold-blooded, worldly, cynical old fellow, who signs himself—Your affectionate, PATER.

The last is to Mr. Edward Clodd, on receiving his book *Jesus of Nazareth.*

4 MARLBOROUGH PLACE, ABBEY ROAD, N.W.,
Dec. 21, 1879.

MY DEAR MR. CLODD—I have been spending all this Sunday afternoon over the book you have been kind enough to send me,

and being a swift reader, I have travelled honestly from cover to cover.

It is the book I have been longing to see; in spirit, matter and form it appears to me to be exactly what people like myself have been wanting. For though for the last quarter of a century I have done all that lay in my power to oppose and destroy the idolatrous accretions of Judaism and Christianity, I have never had the slightest sympathy with those who, as the Germans say, would "throw the child away along with the bath"—and when I was a member of the London School Board I fought for the retention of the Bible, to the great scandal of some of my Liberal friends—who can't make out to this day whether I was a hypocrite, or simply a fool on that occasion.

But my meaning was that the mass of the people should not be deprived of the one great literature which is open to them—not shut out from the perception of their relations with the whole past history of civilised mankind—not excluded from such a view of Judaism and Jesus of Nazareth as that which at last you have given us.

I cannot doubt that your work will have a great success not only in the grosser, but the better sense of the word.—I am yours very faithfully, T. H. HUXLEY.

The winter of 1879-80 was memorable for its prolonged spell of cold weather. One result of this may be traced in a New Year's letter from Huxley to his eldest daughter. "I have had a capital holiday—mostly in bed—but I don't feel so grateful for it as I might do." To be forced to avoid the many interruptions and distractions of his life in London, which claimed the greater part of his time, he would regard as an unmixed blessing; as he once said feelingly to Professor Marsh, "If I could only break my leg, what a lot of scientific work I could do!" But he was less grateful for having entire inaction forced upon him.

However, he was soon about again, and wrote as follows in answer to a letter from Sir Thomas (afterwards Lord) Farrer, which called his attention, as an old Fishery Commissioner, to a recent report on the sea-fisheries.

4 MARLBOROUGH PLACE,
Jan. 9, 1880.

MY DEAR FARRER—I shall be delighted to take a dive into the unfathomable depths of official folly; but your promised document has not reached me.

Your astonishment at the tenacity of life of fallacies, permit me to say, is shockingly unphysiological. They, like other low organisms, are independent of brains, and only wriggle the more, the more they are smitten on the place where the brains ought to be—I don't know B., but I am convinced that A. has nothing but a spinal cord, devoid of any cerebral development. Would Mr. Cross give him up for purposes of experiment? Lingen and you might perhaps be got to join in a memorial to that effect.—Ever yours very faithfully,

T. H. HUXLEY.

A fresh chapter of research, the results of which he now began to give to the public, was the history of the Dog. On April 6 and 13 he lectured at the Royal Institution "On Dogs and the Problems connected with them"—their relation to other animals, and the problem of the origin of the domestic dog, and the dog-like animals in general. As so often before, these lectures were the outcome of the careful preparation of a course of instruction for his students. The dog had been selected as one of the types of mammalian structure upon which laboratory work was to be done. Huxley's own dissections had led him on to a complete survey of the genus, both wild and domestic. As he writes to Darwin on May 10:—

I wish it were not such a long story that I could tell you all about the dogs. They will make out such a case for "Darwinismus" as never was. From the South American dogs at the bottom (C. *vetulus*, *cancrivorus*, etc.) to the wolves at the top, there is a regular gradual progression, the range of variation of each "species" overlapping the ranges of those below and above. Moreover, as to the domestic dogs, I think I can prove that the small dogs are modified jackals, and the big dogs ditto wolves. I have been getting capital material from India, and working the whole affair out on the basis of measurements of skulls and teeth.

However, my paper for the Zoological Society is finished, and I hope soon to send you a copy of it. . . .

Unfortunately he never found time to complete his work for final publication in book form, and the rough, unfinished notes are all that remain of his work, beyond two monographs "On the Epipubis in the Dog and Fox" (*Proc. Roy. Soc.* xxx. 162-63), and "On the Cranial and Dental Characters of the Canidae" (*Proc. Zool. Soc.* 1880, pp. 238-288).

The following letters deal with the collection of specimens for examination:

MARLBOROUGH PLACE,
Jan. 17, 1880.

MY DEAR FLOWER—I happened to get hold of two foxes this week—a fine dog fox and his vixen wife; and among other things, I have been looking up Cowper's glands, the supposed absence of which in the dogs has always "gone agin' me." Moreover, I have found them (or their representatives) in the shape of two small sacs, which open by conspicuous apertures into the urethra immediately behind the bulb. If your *Icticyon* was a male, I commend this point to your notice.

Item—If you have not already begun to macerate him, do look for the "marsupial" fibro-cartilages, which I have mentioned in my "Manual," but the existence of which blasphemers have denied. I found them again at once in both Mr. and Mrs. Vulpes. You spot them immediately by the *pectineus* which is attached to them.

The dog-fox's cæcum is so different from the vixen's that Gray would have made distinct genera of them.—Ever yours very faithfully, T. H. HUXLEY.

4 MARLBOROUGH PLACE, N.W.,
May 2, 1880.

MY DEAR FAYRER—I am greatly obliged for the skulls, and I hope you will offer my best thanks to your son for the trouble he has taken in getting them.

The "fox" is especially interesting because it is not a fox, by any manner of means, but a big jackal with some interesting points of approximation towards the cuons.

I do not see any locality given along with the specimens. Can you supply it?

I have got together some very curious evidence of the wider range of variability of the Indian jackal, and the "fox" which your son has sent is the most extreme form in one direction I have met with.

I wish I could get some examples from the Bombay and Madras Presidencies and from Ceylon, as well as from Central India. Almost all I have seen yet are from Bengal.—Ever yours very faithfully, T. H. HUXLEY.

Between the two lectures on the Dog, mentioned above, on April 9, Huxley delivered a Friday evening discourse, at the same place, "On the Coming of Age of the Origin of Species" (*Coll. Ess.* ii. 227). Reviewing the history of the theory of evolution in the twenty-one years that had elapsed

since the *Origin of Species* first saw the light in 1859, he did not merely dwell on the immense influence the "Origin" had exercised upon every field of biological inquiry. "Mere insanities and inanities have before now swollen to portentous size in the course of twenty years." "History warns us that it is the customary fate of new truths to begin as heresies, and to end as superstitions." There was actual danger lest a new generation should "accept the main doctrines of the *Origin of Species* with as little reflection, and it may be with as little justification, as so many of our contemporaries, years ago, rejected them."

So dire a consummation, he declared, must be prevented by unflinching criticism, the essence of the scientific spirit, "for the scientific spirit is of more value than its products, and irrationally held truths may be more harmful than reasoned errors."

What, then, were the facts which justified so great a change as had taken place, which had removed some of the most important qualifications under which he himself had accepted the theory? He proceeded to enumerate the "crushing accumulation of evidence" during this period, which had proved the imperfection of the geological record; had filled up enormous gaps, such as those between birds and reptiles, vertebrates and invertebrates, flowering and flowerless plants, or the lowest forms of animal and plant life. More: paleontology alone has effected so much—the fact that evolution has taken place is so irresistibly forced upon the mind by the study of the Tertiary mammalia brought to light since 1859, that "if the doctrine of evolution had not existed, paleontologists must have invented it." He further developed the subject by reading before the Zoological Society a paper "On the Application of the Laws of Evolution to the Arrangement of the Vertebrata, and more particularly of the Mammalia" (*Proc. Z. S.* 1880, pp. 649-662). In reply to Darwin's letter thanking him for the "Coming of Age" (*Life and Letters*, iii. 24), he wrote on May 10:—

MY DEAR DARWIN—You are the cheeriest letter-writer I know, and always help a man to think the best of his doings.

Engraved by O. Lacour.

T. H. HUXLEY.

From a Photograph by H. Huxley.

I hope you do not imagine because I had nothing to say about "Natural Selection," that I am at all weak of faith on that article. On the contrary, I live in hope that as palæontologists work more and more in the manner of that "second Daniel come to judgment," that wise young man M. Filhal, we shall arrive at a crushing accumulation of evidence in that direction also. But the first thing seems to me to be to drive the fact of evolution into people's heads; when that is once safe, the rest will come easy.

I hear that *ce cher* X. is yelping about again; but in spite of your provocative messages (which Rachel retailed with great glee), I am not going to attack him nor anybody else.

Another popular lecture on a zoological subject was that of July 1 on "Cuttlefish and Squids," the last of the "Davis" lectures given by him at the Zoological Gardens.

More important were two other essays delivered this year. The "Method of Zadig" (*Coll. Ess.* iv. 1), an address at the Working Men's College, takes for its text Voltaire's story of the philosopher at the Oriental court, who, by taking note of trivial indications, obtains a perilous knowledge of things which his neighbours ascribe either to thievery or magic. This introduces a discourse on the identity of the methods of science and of the judgments of common life, a fact which, twenty-six years before, he had briefly stated in the words, "Science is nothing but trained and organised common sense" (*Coll. Ess.* iii. 45).

The other is "Science and Culture" (*Coll. Ess.* iii. 134), which was delivered on October 1, as the opening address of the Josiah Mason College at Birmingham, and gave its name to a volume of essays published in the following year. Here was a great school founded by a successful ironworker, which was designed to give an education at once practical and liberal, such as the experience of its founder approved, to young men who meant to embark upon practical life. A "mere" literary training—*i.e.* in the classical languages—was excluded, but not so the study of English literature and modern languages. The greatest stress was laid on training in the scientific theory and practice on which depend the future of the great manufactures of the north.

The question dealt with in this address is whether such an education can give the culture demanded of an educated man to-day. The answer is emphatically Yes. English,

literature is a field of culture second to none, and for solely literary purposes, a thorough knowledge of it, backed by some other modern language, will amply suffice. Combined with this, a knowledge of modern science, its principles and results, which have so profoundly modified society and have created modern civilisation, will give a "criticism of life," as Matthew Arnold defined culture, unattainable by any form of education which neglects it. In short, although the "culture" of former periods might be purely literary, that of to-day must be based, to a great extent, upon natural science.

This autumn several letters passed between him and Darwin. The latter, contrary to his usual custom, wrote a letter to *Nature*, in reply to an unfair attack which had been made upon evolution by Sir Wyville Thomson in his Introduction to *The Voyage of the Challenger* (see Darwin, *Life and Letters*, iii. 242), and asked Huxley to look over the concluding sentences of the letter, and to decide whether they should go with the rest to the printer or not. "My request," he writes (Nov. 5), "will not cost you much trouble —*i.e.* to read two pages—for I know that you can decide at once." Huxley struck them out, replying on the 14th, "Your pinned-on paragraph was so good that, if I had written it myself, I should have been unable to refrain from sending it on to the printer. But it is much easier to be virtuous on other people's account; and though Thomson deserved it and more, I thought it would be better to refrain. If I say a savage thing, it is only 'pretty Fanny's way'; but if you do, it is not likely to be forgotten."

The rest of this correspondence has to do with a plan of Darwin's, generous as ever, to obtain a Civil List pension for the veteran naturalist, Wallace, whose magnificent work for science had brought him but little material return. He wrote to consult Huxley as to what steps had best be taken; the latter replied in the letter of November 14:—

> The papers *in re* Wallace have arrived, and I lose no time in assuring you that all my "might, amity, and authority," as Essex said when that sneak Bacon asked him for a favour, shall be exercised as you wish.

On December 11 he sends Darwin the draft of a

memorial on the subject, and on the 28th suggests that the best way of moving the official world would be for Darwin himself to send the memorial, with a note of his own, to Mr. Gladstone, who was then Prime Minister and First Lord of the Treasury :—

> Mr. G. can do a thing gracefully when he is so minded, and unless I greatly mistake, he will be so minded if you write to him.

The result was all that could be hoped. On January 7 Darwin writes!—"Hurrah! hurrah! read the enclosed. Was it not extraordinarily kind of Mr. Gladstone to write himself at the present time? . . . I have written to Wallace. He owes much to you. Had it not been for your advice and assistance, I should never have had courage to go on."

The rest of the letter to Darwin of Dec. 28 is characteristic of his own view of life. He was no pessimist any more than he was a professed optimist. If the vast amount of inevitable suffering precluded the one view, the gratuitous pleasures, so to speak, of life preclude the other. Life properly lived is worth living, and would be even if a malevolent fate had decreed that one should suffer, say, the pangs of toothache two hours out of every twenty-four. So he writes :—

> We have had all the chicks (and the husbands of such as are therewith provided) round the Christmas table once more, and a pleasant sight they were, though I say it that shouldn't. Only the grand-daughter left out, the young woman not having reached the age when change and society are valuable.
>
> I don't know what you think about anniversaries. I like them, being always minded to drink my cup of life to the bottom, and take my chance of the sweets and bitters. Infinite benevolence need not have invented pain and sorrow at all—infinite malevolence would very easily have deprived us of the large measure of content and happiness that falls to our lot. After all, Butler's *Analogy* is unassailable, and there is nothing in theological dogmas more contradictory to our moral sense, than is to be found in the facts of Nature. From which, however, the Bishop's conclusion that the dogmas are true doesn't follow.

The following is to his Edinburgh friend Dr. Skelton,

whose appreciation of his frequent companionship had found outspoken expression in the pages of *The Crookit Meg*.

4 MARLBOROUGH PLACE, N.W.,
Nov. 14, 1880.

MY DEAR SKELTON—When the *Crooked Meg* reached me I made up my mind that it would be a shame to send the empty acknowledgment which I give (or don't give) for most books that reach me.

But I am over head and ears in work—time utterly wasted in mere knowledge getting and giving—and for six weeks not an hour for real edification with a wholesome story.

But this Sunday afternoon being, by the blessing of God, as beastly a November day as you shall see, I have attended to my spiritual side and been visited by a blessing in the shape of some very pretty and unexpected words anent mysel'.[1]

In truth, it is right excellent story, though, being distinctly in love with Eppie, I can only wonder how you had the heart to treat her so ill. A girl like that should have had two husbands—one "wisely ranged for show" and t'other *de par amours*.

Don't ruin me with Mrs. Skelton by repeating this, but please remember me very kindly to her.—Ever yours very faithfully,

T. H. HUXLEY.

The following letter to Tyndall was called forth by an incident in connection with the starting of the *Nineteenth Century*. Huxley had promised to help the editor by looking over the proofs of a monthly article on contemporary science. But his advertised position as merely adviser in this to the editor was overlooked by some who resented what they supposed to be his assumption of the rôle of critic in general to his fellow-workers in science. At a meeting of the *x* Club, Tyndall made a jesting allusion

[1] The passage referred to stands on p. 72 of *The Crookit Meg*, and describes the village naturalist and philosopher, Adam Meldrum, "who in his working hours cobbled old boats, and knew by heart the plays of Shakespeare and the *Pseudodoxia Epidemica* of Sir Thomas Browne."

"For the rest it will be enough to add that this long, gaunt, bony cobbler of old boats was—was—(may I take the liberty, Mr. Professor?) a village Huxley of the year One. The colourless brilliancy of the great teacher's style, the easy facility with which the drop of light forms itself into a perfect sphere as it falls from his pen, belong indeed to a consummate master of the art of expression which Adam of course was not; but the mental lucidity, justice, and balance, as well as the reserve of power, and the Shakespearian gaiety of touch, which made the old man one of the most delightful companions in the world, were essentially Huxleian."

to this; Huxley, however, thought the mere suggestion too grave for a joke, and replied with all seriousness to clear himself from the possibility of such misconception. And the same evening he wrote to Tyndall:—

ATHENÆUM CLUB, PALL MALL, S.W.,
Dec. 2, 1880.

MY DEAR TYNDALL—I must tell you the ins and outs of this *Nineteenth Century* business. I was anxious to help Knowles when he started the journal, and at his earnest and pressing request I agreed to do what I have done. But being quite aware of the misinterpretation to which I should be liable if my name "sans phrase" were attached to the article, I insisted upon the exact words which you will find at the head of it; and which seemed, and still seem to me, to define my position as a mere adviser of the editor.

Moreover, by diligently excluding any expression of opinion on the part of the writers of the compilation, I thought that nobody could possibly suspect me of assuming the position of an authority even on the subjects with which I may be supposed to be acquainted, let alone those such as physics and chemistry, of which I know no more than anyone of the public may know.

Therefore your remarks came upon me to-night with the sort of painful surprise which a man feels who is accused of the particular sin of which he flatters himself he is especially *not guilty*, and "roused my corruption" as the Scotch have it. But there is no need to say anything about that, for you were generous and good as I have always found you. Only I pray you, if hereafter it strikes you that any doing of mine should be altered or amended, tell me yourself and privately, and I promise you a very patient listener, and what is more a very thankful one.—Ever yours,

T. H. HUXLEY.

Tyndall replied with no less frankness, thanking him for the friendly promptitude of his letter, and explaining that he had meant to speak privately on the matter, but had been forestalled by the subject coming up when it did. And he wound up by declaring that it would be too absurd to admit the power of such an occasion "to put even a momentary strain upon the cable which has held us together for nine and twenty years."

At the very end of the year, George Eliot died. A proposal was immediately set on foot to inter her remains

in Westminster Abbey, and various men of letters pressed the matter on the Dean, who was unwilling to stir without a very strong and general expression of opinion. To Mr Herbert Spencer, who had urged him to join in memorialising the Dean, Huxley replied as follows:—

4 MARLBOROUGH PLACE,
Dec. 27, 1880.

MY DEAR SPENCER — Your telegram which reached me on Friday evening caused me great perplexity, inasmuch as I had just been talking with Morley, and agreeing with him that the proposal for a funeral in Westminster Abbey had a very questionable look to us, who desired nothing so much as that peace and honour should attend George Eliot to her grave.

It can hardly be doubted that the proposal will be bitterly opposed, possibly (as happened in Mill's case with less provocation) with the raking up of past histories, about which the opinion even of those who have least the desire or the right to be pharisaical is strongly divided, and which had better be forgotten.

With respect to putting pressure on the Dean of Westminster, I have to consider that he has some confidence in me, and before asking him to do something for which he is pretty sure to be violently assailed, I have to ask myself whether I really think it a right thing for a man in his position to do.

Now I cannot say I do. However much I may lament the circumstance, Westminster Abbey is a Christian Church and not a Pantheon, and the Dean thereof is officially a Christian priest, and we ask him to bestow exceptional Christian honours by this burial in the Abbey. George Eliot is known not only as a great writer, but as a person whose life and opinions were in notorious antagonism to Christian practice in regard to marriage, and Christian theory in regard to dogma. How am I to tell the Dean that I think he ought to read over the body of a person who did not repent of what the Church considers moral sin, a service not one solitary proposition in which she would have accepted for truth while she was alive? How am I to urge him to do that which, if I were in his place, I should most emphatically refuse to do?

You tell me that Mrs. Cross wished for the funeral in the Abbey. While I desire to entertain the greatest respect for her wishes, I am very sorry to hear it. I do not understand the feeling which could create such a desire on any personal grounds, save those of affection, and the natural yearning to be near even in death to those whom we have loved. And on public grounds the wish is still less intelligible to me. One cannot eat one's cake and have it too. Those who elect to be free in thought and deed must not

hanker after the rewards, if they are to be so called, which the world offers to those who put up with its fetters.

Thus, however I look at the proposal it seems to me to be a profound mistake, and I can have nothing to do with it.

I shall be deeply grieved if this resolution is ascribed to any other motives than those which I have set forth at more length than I intended.—Ever yours very faithfully, T. H. HUXLEY.

CHAPTER II

1881

THE last ten years had found Huxley gradually involved more and more in official duties. Now, with the beginning of 1881, he became yet more deeply engrossed in practical and administrative work, more completely cut off from his favourite investigations, by his appointment to an Inspectorship of Fisheries, in succession to the late Frank Buckland. It is almost pathetic to note how he snatched at any spare moments for biological research. No sooner was a long afternoon's work at the Home Office done, than, as Professor Howes relates, he would often take a hansom to the laboratory at South Kensington, and spend a last half-hour at his dissections before going home.

The Inspectorship, which was worth £700 a year, he held in addition to his post at South Kensington, the official description of which now underwent another change. In the first place, his official connection with the Survey appears to have ceased this year, the last report made by him being in 1881. His name, however, still appeared in connection with the post of Naturalist until his retirement in 1885, and it was understood that his services continued to be available if required. Next, in October of this year, the Royal School of Mines was incorporated with the newly established Normal School—or as it was called in 1890, Royal College of Science, and the title of Lecturer on General Natural History was suppressed, and Huxley became Professor of Biology and Dean of the College at a salary of £800, for it was arranged on his appointment to the Inspectorship, that he should not receive the salary

attached to the post of Dean. Thus the Treasury saved £200 a year.

As Professor of Biology, he was under the Lord President of the Council; as Inspector of Fisheries, under the Board of Trade; hence some time passed in arranging the claims of the two departments before the appointment was officially made known, as may be gathered from the following letters:—

To Sir John Donnelly

4 Marlborough Place,
Dec. 27, 1880.

My dear Donnelly—I tried hard to have a bad cold last night, and though I blocked him with quinine I think I may as well give myself the benefit of the Bank Holiday and keep the house to-day.

There is a chance of your getting early salmon yet. I wrote to decline the post on Friday, but on Saturday evening the Home Secretary sent a note asking to see me yesterday. As he had re-opened the question of course I felt justified in stating all the pros and cons of the case as personal to myself and my rather complicated official position. . . . He entered into the affair with a warmth and readiness which very agreeably surprised me, and he proposes making such arrangements as will not oblige me to have anything to do with the weirs or the actual inspection. Under these circumstances the post would be lovely—if I can hold it along with the other things. And of his own motion the Home Secretary is going to write to Lord Spencer about it to see if he cannot carry the whole thing through.

If this could be managed I could get great things done in the matter of fish culture and fish diseases at South Kensington, if poor dear X.'s rattle trappery could be turned to proper account, without in any way interfering with the work of the School.

At any rate, my book stands not to lose, and may win—the innocence of the dove is not always divorced from the wisdom of the sarpent. [Sketch of the "Sarpent."]

To Lord Farrer

4 Marlborough Place,
Jan. 18, 1881.

My dear Farrer—I have waited a day or two before thanking you for your very kind letter, in the hope that I might be able to speak as one knowing where he is.

But as I am still, in an official sense, nowhere, I will not delay any longer.

I had never thought of the post, but the Home Secretary offered it to me in a very kind and considerate manner, and after some hesitation I accepted it. But some adjustment had to be made between my master, the Lord President, and the Treasury; and although everybody seems disposed to be very good to me, the business is not yet finally settled. Whence the newspapers get their information I don't know—but it is always wrong in these matters.

As you know I have had a good apprenticeship to the work[1]—and I hope to be of some use; of the few innocent pleasures left to men past middle life—the jamming common-sense down the throats of fools is perhaps the keenest.

May we do some joint business in that way!—Ever yours very faithfully, T. H. HUXLEY.

TO HIS ELDEST SON

Feb. 14, 1881.

I have entered upon my new duties as Fishery Inspector, but you are not to expect salmon to be much cheaper just yet.

My colleague and I have rooms at the Home Office, and I find there is more occupation than I expected, but no serious labour.

Every now and then I shall have to spend a few days in the country, holding inquiries, and as salmon rivers are all in picturesque parts of the country, I shall not object to that part of the business.

The duties of the new office were partly scientific, partly administrative. On the one hand, the natural history and diseases of fish had to be investigated; on the other, regulations had to be carried out, weirs and salmon passes approved, disputes settled, reports written. I find for instance, that apart from the work in London, visits of inspection in all parts of the country took up twenty-eight days between March and September this year.

Sir Spencer Walpole, who was his colleague for some years, has kindly given me an account of their work together.

Early in 1881, Sir William Harcourt appointed Professor Huxley one of Her Majesty's Inspectors of Fisheries. The office had become vacant through the untimely death, in the preceding December, of the late Mr. Frank Buckland. Under an Act, passed twenty

[1] He had already served on two Fishery Commissions, 1862 and 1864–5.

years before, the charge of the English Salmon Fisheries had been placed under the Home Office, and the Secretary of State had been authorised to appoint two Inspectors to aid him in administering the law. The functions of the Home Office and of the Inspectors were originally simple, but they had been enlarged by an Act passed in 1873, which conferred on local conservators elaborate powers of making bye-laws for the development and preservation of the Fisheries. These bye-laws required the approval of the Secretary of State, who was necessarily dependent on the advice of his Inspectors in either allowing or disallowing them.

In addition to the nominal duties of the Inspectors, they became —by virtue of their position—the advisers of the Government on all questions connected with the Sea Fisheries of Great Britain. These fisheries are nominally under the Board of Trade, but, as this Board at that time had no machinery at its disposal for the purpose, it naturally relied on the advice of the Home Office Inspectors in all questions of difficulty, on which their experience enabled them to speak with authority.

For duties such as these, which have been thus briefly described, Professor Huxley had obvious qualifications. On all subjects relating to the Natural History of Fish he spoke with decisive authority. But, in addition to his scientific attainments, from 1863 to 1865 he had been a member of the Commission which had conducted an elaborate investigation into the condition of the Fisheries of the United Kingdom, and had taken a large share in the preparation of a Report, which—notwithstanding recent changes in law and policy—remains the ablest and most exhaustive document which has ever been laid before Parliament on the subject.

This protracted investigation had convinced Professor Huxley that the supply of fish in the deep sea was practically inexhaustible; and that, however much it might be necessary to enforce the police of the seas by protecting particular classes of sea fishermen from injury done to their instruments by the operations of other classes, the primary duty of the legislature was to develop sea fishing, and not to place restrictions on sea fishermen for any fears of an exhaustion of fish.

His scientific training, moreover, made him ridicule the modern notion that it was possible to stock the sea by artificial methods. He wrote to me, when the Fisheries Exhibition of 1883 was in contemplation, "You may have seen that we have a new Fish Culture Society. C—— talked gravely about our stocking the North Sea with cod! After that I suppose we shall take up herrings: and I mean to propose whales, which, as all the world knows, are terribly over fished!" And after the exhibition was over he wrote to me again, with reference to a report which the Commission had asked me to draw up: "I have just finished reading your report, which has given

me a world of satisfaction. . . . I am particularly glad that you have put in a word of warning to the fish culturists."[1]

He was not, however, equally certain that particular areas of Sea Shore might not be exhausted by our fishing. He extended in 1883 an order which Mr. Buckland and I had made in 1879 for restricting the taking of crabs and lobsters on the coast of Norfolk, and he wrote to me on that occasion: "I was at Cromer and Sheringham last week, holding an enquiry for the Board of Trade about the working of your order of 1879. According to all accounts, the crabs have multiplied threefold in 1881 and 1882. Whether this is *post hoc* or *propter hoc* is more than I should like to say. But at any rate, this is a very good *primâ facie* case for continuing the order, and I shall report accordingly. Anyhow, the conditions are very favourable for a long-continued experiment in the effects of regulation, and, ten years hence, there will be some means of judging of the value of these restrictions."

If, however, Professor Huxley was strongly opposed to unnecessary interference with the labours of sea fishermen, he was well aware of the necessity of protecting migratory fish like salmon, against over-fishing: and his reports for 1882 and 1883—in which he gave elaborate accounts of the results of legislation on the Tyne and on the Severn—show that he keenly appreciated the necessity of regulating the Salmon Fisheries.

It so happened that at the time of his appointment, many of our important rivers were visited by "Saprolegnia ferax," the fungoid growth which became popularly known as Salmon Disease. Professor Huxley gave much time to the study of the conditions under which the fungus flourished: he devoted much space in his earlier reports to the subject: and he read a paper upon it at a remarkable meeting of the Royal Society in the summer of 1881. He took a keen interest in these investigations, and he wrote to me from North Wales, at the end of 1881, "The salmon brought to me here have not been so badly diseased as I could have wished, and the fungus dies so rapidly out of the water that only one specimen furnished me with materials in lively condition. These I have cultivated: and to my great satisfaction have got some flies infected. With nine precious muscoid corpses, more or less ornamented with a lovely fur trimming of Saprolegnia, I shall return to London to-morrow, and shall be ready in a short time, I hope, to furnish Salmon Disease wholesale, retail, or for exportation."

[1] When I was asked to write the report on this Commission, I said that I would do so if Sir E. Birkbeck, its chairman, and Professor Huxley, both met me to discuss the points to be noticed. The meeting duly took place: and I opened it by asking what was the chief lesson to be drawn from the exhibition? "Well," said Professor Huxley, "the chief lesson to be drawn from the exhibition is that London is in want of some open air amusement on summer evenings."

In carrying out the duties of our office, Professor Huxley and I were necessarily thrown into very close communication. There were few days in which we did not pass some time in each other's company: there were many weeks in which we travelled together through the river basins of this country. I think that I am justified in saying that official intercourse ripened into warm personal friendship, and that, for the many months in which we served together, we lived on terms of intimacy which are rare even among colleagues or even among friends.

It is needless to say that, as a companion, Professor Huxley was the most delightful of men. Those who have met him in society, or enjoyed the hospitality of his house, must have been conscious of the singular charm of a conversation, which was founded on knowledge, enlarged by memory, and brightened by humour. But, admirable as he was in society, no one could have realised the full charm of his company who had not conversed with him alone. He had the rare art of placing men, whose knowledge and intellect were inferior to his own, at their ease. He knew how to draw out all that was best in the companion who suited him; and he had equal pleasure in giving and receiving. Our conversation ranged over every subject. We discussed together the grave problems of man and his destiny; we disputed on the minor complications of modern politics; we criticised one another's literary judgments; and we laughed over the stories which we told one another, and of which Professor Huxley had an inexhaustible fund.

In conversation Professor Huxley displayed the quality which distinguished him both as a writer and a public speaker. He invariably used the right words in the right sense. Those who are jointly responsible—as he and I were often jointly responsible—for some written document, have exceptional opportunities of observing this quality. Professor Huxley could always put his finger on a wrong word, and he always instinctively chose the right one. It was this qualification—a much rarer one than people imagine—which made Professor Huxley's essays clear to the meanest understanding, and which made him, in my judgment, the greatest master of prose of his time. The same quality was equally observable in his spoken speech. I happened to be present at the anniversary dinner of the Royal Society, at which Professor Huxley made his last speech. And, as he gave an admirable account of the share which he had taken in defending Mr. Darwin against his critics, I overheard the present Prime Minister [1] say, "What a beautiful speaker he is."

In 1882, the duties of another appointment forced me to resign the Inspectorship, which I had held for so long: and thenceforward my residence in the Isle of Man gave me fewer opportunities of seeing Professor Huxley: our friendship, however, remained

[1] Lord Salisbury.

unbroken; and occasional visits to London gave me many opportunities of renewing it. He retained his own appointment as Inspector for more than three years after my resignation. He served, during the closing months of his officialship, on a Royal Commission on trawling, over which the late Lord Dalhousie presided. But his health broke down before the commissioners issued their report, and he was ordered abroad. It so happened that in the spring of 1885 I was staying at Florence, when Professor and Mrs. Huxley passed through it on their way home. He had at that time seen none of his old friends, and was only slowly regaining strength. After his severe illness Mrs. Huxley encouraged me to take him out for many short walks, and I did my best to cheer him in his depressed condition. He did not then think that he had ten years of—on the whole—happy life before him. He told me that he was about to retire from all his work, and he added, that he had never enjoyed the Inspectorship after I had left it. I am happy in believing that the remark was due to the depression from which he was suffering, for he had written to me two years ago, "The office would be quite perfect, if they did not want an annual report. I can't go in for a disquisition on river basins after the manner of Buckland, and you have exhausted the other topics. I polished off the Salmon Disease pretty fully last year, so what the deuce am I to write about?"

I saw Professor Huxley for the last time on the Christmas day before his death. I spent some hours with him, with no other companions than Mrs. Huxley and my daughter. I had never seen him brighter or happier, and his rich, playful and sympathetic talk vividly recalled the many brilliant hours which I had passed in his company some twelve or thirteen years before.

One word more. No one could have known Professor Huxley intimately without recognising that he delighted in combat. He was never happier than when he was engaged in argument or controversy, and he loved to select antagonists worthy of his steel. The first public enquiry which we held together was attended by a great nobleman, whom Professor Huxley did not know by sight, but who rose at the commencement of our proceedings to offer some suggestions. Professor Huxley directed him to sit down, and not interrupt the business. I told my colleague in a whisper whom he was interrupting. And I was amused, as we walked away to luncheon together, by his quaint remark to me, "We have begun very well, we have sat upon a duke."[1]

[1] Of this he wrote home on March 15, 1881: "Somebody produced the *Punch* yesterday and showed it to me, to the great satisfaction of the Duke of ——, who has attended our two meetings. I nearly had a shindy with him at starting, but sweetness and light (in my person) carried the day." This *Punch* contained the cartoon of Huxley in nautical costume riding on a salmon; contrary to the custom of *Punch*, it made an unfair hit in appending to his name the letters £ s. d. Never was any one who deserved the imputation less.

If, however, a love of argument and controversy occasionally led him into hot water, I do not think that his polemical tendencies ever cost him a friend. His antagonists must have recognised the fairness of his methods, and must have been susceptible to the charm of the man. The high example which he set in controversy, moreover, was equally visible in his ordinary life. Of all the men I have ever known, his ideas and his standard were—on the whole—the highest. He recognised that the fact of his religious views imposed on him the duty of living the most upright of lives, and I am very much of the opinion of a little child, now grown into an accomplished woman, who, when she was told that Professor Huxley had no hope of future rewards, and no fear of future punishments, emphatically declared: "Then I think Professor Huxley is the best man I have ever known."

Extracts from his letters home give some further idea of the kind of work entailed. Thus in March and again in May he was in Wales, and writes:—

CROMFFYRATELLIONPTRROCH,
May 24.

Mr. Barrington's very pretty place about five miles from Abergavenny, wherein I write, may or may not have the name which I have written on at the top of the page, as it is Welsh; however it is probably that or something like it. I forgot to enquire.

We are having the loveliest weather, and yesterday went looking up weirs with more or less absurd passes up a charming valley not far hence. It is just seven o'clock, and we are going to breakfast and start at eight to fit in with the tides of the Severn. It is not exactly clear where we shall be to-night. . . . Now I must go to breakfast, for I got up at six. *Figurez vous ça.*

May 29—*Hereford.*—We are favoured by the weather again, though it is bitter cold under the bright sunshine. We stopped at Worcester yesterday, and I went to examine some weirs hard by. This involved three or four miles' country walking, and was all to the good. If the Inspector business were all of this sort it would be all that fancy painted it. We shall have a long sitting to-day. . . . [He fears to be detained into the night by "over-fluent witnesses."]

In April he spent several days at Norwich, in connection with the National Fishery Exhibition held there.

April 19.—We had a gala day yesterday. . . . The exhibition of all manner of fish and fishing apparatus was ready, for a wonder, and looked very well. The Prince and Princess arrived, and we had the usual address and reply and march through. Afterwards a mighty *déjeûner* in the St. Andrew's Hall—a fine old place looking

its best. I was just opposite the Princess, and I could not help looking at her with wonderment. She looked so fresh and girlish. She came and talked to me afterwards in a very pleasant simple way.

Walpole and I went in with our host yesterday afternoon and started to return on the understanding that he should pick us up a few miles out. Of course we took the wrong road, and walked all the way, some eight miles or so. However, it did us good, and after a champagne lunch we thought we could not do better than repeat the operation yesterday.

I feel quite set up by finding that after standing about for hours I can walk eight miles without any particular fatigue. Life in the old dog yet! Walpole is a capital companion—knows a great many things, and talks well about them, so we get over the ground pleasantly.

April 20.—There was a long day of it yesterday looking over things in the Exhibition till late in the afternoon, and then a mighty dinner in St. Andrew's Hall given by a Piscatorial Society of which my host is President. It was a weary sitting of five hours with innumerable speeches. Of course I had to say "a few words," and if I can get a copy of the papers I will send them to you. I flatter myself they were words of wisdom, though hardly likely to contribute to my popularity among the fishermen.

On the 21st he gave an address on the Herring. To describe the characteristics of this fish in the Eastern Counties, he says, might seem like carrying coals to Newcastle; nevertheless the fisherman's knowledge is not the same as that of the man of science, and includes none but the vaguest notions of the ways of life of the fish and the singularities of its organisation which perplexed biologists. His own study of the problems connected with the herring had begun nineteen years before, when he served on the first of his two Fishery Commissions; and one of his chief objects in this address was to insist upon a fact, borne out partly by the inquiries of the Commission, partly by later investigations in Europe and America, which it was difficult to make people appreciate, namely, the impossibility of man's fisheries affecting the numbers of the herring to any appreciable extent, a year's catch not amounting to the estimated number of a single shoal; while the flatfish and cod fisheries remove many of the most destructive enemies of the herring. Those who had not studied the question in this light would

say that "it stands to reason" that vast fisheries must tend to exterminate the fish; apropos of which, he made his well-known remark that in questions of biology "if any one tells me 'it stands to reason' that such and such things must happen, I generally find reason to doubt the safety of his standing."

This year, also, he began the investigations which completed former inquiries into the subject, and finally elucidated the nature of the salmon disease. The last link in the chain of evidence which proved its identity with a fungoid disease of flies, was not reached until March 1883; and on July 3 following he delivered a full account of the disease, its nature and origin, in an address at the Fisheries Exhibition in London.

In 1881, then, at the end of December, he went to North Wales to study on the fresh fish, the nature of the epidemic of salmon disease which had broken out in the Conway, in spite of being in such bad health that he was persuaded to let his younger son come and look after him. But this was only a passing premonition of the breakdown which was to come upon him three years after.

One year's work as Inspector was very like another. In 1882, for instance, on January 21, he is at Berwick, "voiceless but jolly"; in the spring he had to attend a Fisheries Exhibition in Edinburgh, and writes:—

April 12.—We have opened our Exhibition, and I have been standing about looking at the contents until my back is broken.

April 13.—The weather here is villainous—a regular Edinburgh "coorse day." I have seen all I wanted to see of the Exhibition, eaten two heavy dinners, one with Primrose and one with Young, and want to get home. Walpole and I are dining domestically at home this evening, having virtuously refused all invitations.

In June he was in Hampshire; on July 25 he writes from Tynemouth:—

I reached here about 5 o'clock, and found the bailiff or whatever they call him of the Board of Conservators, awaiting me with a boat at my disposal. So we went off to look at what they call "The Playground"—two bays in which the salmon coming from the sea rest and disport themselves until a fresh comes down the river and they find it convenient to ascend. Harbottle bailiff in question is

greatly disturbed at the amount of poaching that goes on in the playground, and unfolded his griefs to me at length. It was a lovely evening, very calm, and I enjoyed my boat expedition. To-morrow there is to be another to see the operations of a steam trawler, which in all probability I shall not enjoy so much. I shall take a light breakfast.

These were the pleasanter parts of the work. The less pleasant was sitting all day in a crowded court, hearing a disputed case of fishing rights, or examining witnesses who stuck firmly to views about fish which had long been exploded by careful observation. But on the whole he enjoyed it, although it took him away from research in other departments. This summer, on the death of Professor Rolleston, he was sounded on the question whether he would consent to accept the Linacre Professorship of Physiology at Oxford. He wrote to the Warden of Merton :—

4 MARLBOROUGH PLACE, *June* 22, 1881.

MY DEAR BRODRICK—Many thanks for your letter. I can give you my reply at once, as my attention has already been called to the question you ask; and it is that I do not see my way to leaving London for Oxford. My reasons for arriving at this conclusion are various. I am getting old, and you should have a man in full vigour. I doubt whether the psychical atmosphere of Oxford would suit me, and still more, whether I should suit it after a life spent in the absolute freedom of London. And last, but by no means least, for a man with five children to launch into the world, the change would involve a most serious loss of income. No doubt there are great attractions on the other side; and, if I had been ten years younger, I should have been sorely tempted to go to Oxford, if the University would have had me. But things being as they are, I do not see my way to any other conclusion than that which I have reached.

The same feeling finds expression in a letter to Professor (afterwards Sir William) Flower, who was also approached on the same subject, and similarly determined to remain in London.

July 21, 1881.

MY DEAR FLOWER—I am by no means surprised, and except for the sake of the University, not sorry that you have renounced the Linacre.

Life is like walking along a crowded street—there always seem to be fewer obstacles to getting along on the opposite pavement—and yet, if one crosses over, matters are rarely mended.

I assure you it is a great comfort to me to think that you will stay in London and help in keeping things straight in this world of crookedness.

I have thought a good deal about ——, but it would never do. No one could value his excellent qualities of all kinds, and real genius in some directions, more than I do; but, in my judgment, nobody could be less fitted to do the work which ought to be done in Oxford—— I mean to give biological science a status in the eyes of the Dons, and to force them to acknowledge it as a part of general education. Moreover, his knowledge, vast and minute as it is in some directions, is very imperfect in others, and the attempt to qualify himself for the post would take him away from the investigations, which are his delight and for which he is specially fitted. . . .

I was very much interested in your account of the poor dear Dean's illness. I called on Thursday morning, meeting Jowett and Grove at the door, and we went in and heard such an account of his state that I had hopes he might pull through. We shall not see his like again.

The last time I had a long talk with him was about the proposal to bury George Eliot in the Abbey, and a curious revelation of the extraordinary catholicity and undaunted courage of the man it was. He would have done it had it been pressed upon him by a strong representation.

I see he is to be buried on Monday, and I suppose and hope I shall have the opportunity of attending.—Ever yours very faithfully,

T. H. HUXLEY.

This letter refers to the death of his old friend Dean Stanley. The Dean had long kept in touch with the leaders of scientific thought, and it is deeply interesting to know that on her death-bed, five years before, his wife said to him as one of her parting counsels, "Do not lose sight of the men of science, and do not let them lose sight of you." "And then," writes Stanley to Tyndall, "she named yourself and Huxley."

Strangely enough, the death of the Dean involved another invitation to Huxley to quit London for Oxford. By the appointment of Dean Bradley to Westminster, the Mastership of University College was left vacant. Huxley, who was so far connected with the college that he had examined there for a science Fellowship, was asked if he

would accept it, but after careful consideration declined. He writes to his son, who had heard rumours of the affair in Oxford :—

4 MARLBOROUGH PLACE, *Nov.* 4, 1881.

MY DEAR LENS—There is truth in the rumour; in so far as this that I was asked if I would allow myself to be nominated for the Mastership of University, that I took the question into serious consideration and finally declined.

But I was asked to consider the communication made to me confidential, and I observed the condition strictly. The leakage must have taken place among my Oxford friends, and is their responsibility, but at the same time I would rather you did not contribute to rumour on the subject. Of course I should have told you if I had not been bound to reticence.

I was greatly tempted for a short time by the prospect of rest, but when I came to look into the matter closely there were many disadvantages. I do not think I am cut out for a Don nor your mother for a Donness—we have had thirty years' freedom in London, and are too old to put in harness.

Moreover, in a monetary sense I should have lost rather than gained.

My astonishment at the proposal was unfeigned, and I begin to think I may yet be a Bishop.—Ever your loving father,

T. H. HUXLEY.

His other occupations this year were the Medical Acts Commission, which sat until the following year, and the International Medical Congress.

The Congress detained him in London this summer later than usual. It lasted from the 3rd to the 9th of August, on which day he delivered a concluding address on 'The Connection of the Biological Sciences with Medicine" (*Coll. Ess.* iii. p. 347). He showed how medicine was gradually raised from mere empiricism and based upon true pathological principles, through the independent growth of physiological knowledge, and its correlation to chemistry and physics. "It is a peculiarity," he remarks, "of the physical sciences that they are independent in proportion as they are imperfect." Yet "there could be no real science of pathology until the science of physiology had reached a degree of perfection unattained, and indeed unattainable, until quite recent times." Historically speaking, modern physiology, he

pointed out, began with Descartes' attempt to explain bodily phenomena on purely physical principles; but the Cartesian notion of one controlling central mechanism had to give way before the proof of varied activities residing in various tissues, until the cell-theory united something of either view. "The body is a machine of the nature of an army, not that of a watch or of a hydraulic apparatus." On this analogy, diseases are derangements either of the physiological units of the body, or of their co-ordinating machinery: and the future of medicine depends on exact knowledge of these derangements and of the precise alteration of the conditions by the administration of drugs or other treatment, which will redress those derangements without disturbing the rest of the body.

A few extracts from letters to his wife describe his occupation at the Congress, which involved too much "society" for his liking.

August 4.—The Congress began with great *éclat* yesterday, and the latter part of Paget's address was particularly fine. After, there was the lunch at the Pagets' with the two Royalties. After that, an address by Virchow. After that, dinner at Sanderson's, with a confused splutter of German to the neighbours on my right. After that a tremendous soirée at South Kensington, from which I escaped as soon as I could, and got home at midnight. There is a confounded Lord Mayor's dinner this evening ("the usual turtle and speeches to the infinite bewilderment and delight of the foreigners," August 6); and to-morrow a dinner at the Physiological Society. But I have got off the Kew party, and mean to go quietly down to the Spottiswoodes [*i.e.* at Sevenoaks] on Saturday afternoon, and get out of the way of everything except the College of Surgeons' Soirée, till Tuesday. Commend me for my prudence.

On the 5th he was busy all day with Government Committees, only returning to correct proofs of his address before the social functions of the evening. Next morning he writes:—

I have been toiling at my address this morning. It is all printed, but I must turn it inside out, and make a speech of it if I am to make any impression on the audience in St. James' Hall. Confound all such bobberies.

August 9.—I got through my address to-day as well as I ever

did anything. There was a large audience, as it was the final meeting of the Congress, and to my surprise I found myself in excellent voice and vigour. So there is life in the old dog yet. But I am greatly relieved it is over, as I have been getting rather shaky.

When the Medical Congress was over, he joined his family at Grasmere for the rest of August. In September he attended the British Association at York, where he read a paper on the "Rise and Progress of Paleontology," and ended the month with fishery business at Aberystwith and Carmarthen.

The above paper is to be found in *Collected Essays*, iv. p. 24. In it he concludes an historical survey of the views held about fossils by a comparison of the opposite hypotheses upon which the vast store of recently accumulated facts may be interpreted; and declaring for the hypothesis of evolution, repeats the remarkable words of the "Coming of Age of the Origin of Species," that "the paleontological discoveries of the last decade are so completely in accordance with the requirements of this hypothesis that, if it had not existed, the paleontologist would have had to invent it."

In February died Thomas Carlyle. Mention has already been made of the influence of his writings upon Huxley in strengthening and fixing once for all, at the very outset of his career, that hatred of shams and love of veracity, which were to be the chief principle of his whole life. It was an obligation he never forgot, and for this, if for nothing else, he was ready to join in a memorial to the man. In reply to a request for his support in so doing, he wrote to Lord Stanley of Alderley on March 9:—

> Anything I can do to help in raising a memorial to Carlyle shall be most willingly done. Few men can have dissented more strongly from his way of looking at things than I; but I should not yield to the most devoted of his followers in gratitude for the bracing wholesome influence of his writings when, as a very young man, I was essaying without rudder or compass to strike out a course for myself.

Mention has already been made (p. 29) of his ill-health

at the end of the year, which was perhaps a premonition of the breakdown of 1883. An indication of the same kind may be found in the following letter to Mrs. Tyndall, who had forwarded a document which Dr. Tyndall had meant to send himself with an explanatory note.

4 MARLBOROUGH PLACE, *March* 25, 1881.

MY DEAR MRS. TYNDALL—But where is his last note to me? That is the question on which I have been anxiously hoping for light since I received yours and the inclosure, which contains such a very sensible proposition that I should like to know how it came into existence, abiogenetically or otherwise.

As I am by way of forgetting everything myself just now, it is a comfort to me to believe that Tyndall has forgotten he forgot to send the letter of which he forgot the inclosure. The force of dis-remembering could no further go.—In affectionate bewilderment, ever yours, T. H. HUXLEY.

His general view of his health, however, was much more optimistic, as appears from a letter to Mrs. May (wife of the friend of his boyhood) about her son, whose strength had been sapped by typhoid fever, and who had gone out to the Cape to recruit.

4 MARLBOROUGH PLACE, *June* 10, 1881.

MY DEAR MRS. MAY—I promised your daughter the other day that I would send you the Bishop of Natal's letter to me. Unfortunately I had mislaid it, and it only turned up just now when I was making one of my periodical clearances in the chaos of papers that accumulates on my table.

You will be pleased to see how fully the good Bishop appreciates Stuart's excellent qualities, and as to the physical part of the business, though it is sad enough that a young man should be impeded in this way, I think you should be hopeful. Delicate young people often turn out strong old people—I was a thread paper of a boy myself, and now I am an extremely tough old personage. . . .

With our united kind regards to Mr. May and yourself—Ever yours very faithfully, T. H. HUXLEY.

Perhaps if he had been able each year to carry out the wish expressed in the following letter, which covered an introduction to Dr. Tyndall at his house on the Bel Alp, the breakdown of 1883 might have been averted.

4 MARLBOROUGH PLACE, LONDON, N.W.,
July 5 (1881 ?)

MY DEAR SKELTON—It is a great deal more than I would say for everybody, but I am sure Tyndall will be very much obliged to me for making you known to him; and if you, insignificant male creature, how very much more for the opportunity of knowing Mrs. Skelton!

For which last pretty speech I hope the lady will make a prettier curtsey. So go boldly across the Aletsch, and if they have a knocker (which I doubt), knock and it shall be opened unto you.

I wish I were going to be there too; but Royal Commissions are a kind of endemic in my constitution, and I have a very bad one just now.[1]

With kind remembrances to Mrs. Skelton—Ever yours very faithfully, T. H. HUXLEY.

The ecclesiastical sound of his new title of Dean of the College of Science afforded him a good deal of amusement. He writes from Grasmere, where he had joined his family for the summer vacation:—

Aug. 18, 1881.

MY DEAR DONNELLY—I am astonished that you don't know that a letter to a Dean ought to be addressed "The Very Revd." I don't generally stand much upon etiquette, but when my sacred character is touched I draw the line.

We had athletics here yesterday, and as it was a lovely day, all Cumberland and Westmoreland sent contingents to see the fun. . . .

This would be a grand place if it were drier, but the rain it raineth every day—yesterday being the only really fine day since our arrival.

However, we all thrive, so I suppose we are adapting ourselves to the medium, and shall be scaly and finny before long.

Haven't you done with Babylon yet? It is high time you were out of it.—Ever yours very faithfully, T. H. HUXLEY.

[1] *The Medical Acts Commission*, 1881-2.

CHAPTER III

1882

THE year 1882 was a dark year for English science. It was marked by the death of both Charles Darwin and of Francis Balfour, the young investigator, of whom Huxley once said, "He is the only man who can carry out my work." The one was the inevitable end of a great career, in the fulness of time; the other was one of those losses which are the more deplorable as they seem unnecessary, the result of a chance slip, in all the vigour of youth. I remember his coming to our house just before setting out on his fatal visit to Switzerland, and my mother begging him to be careful about risking so valuable a life as his in dangerous ascents. He laughingly replied that he only wanted to conquer one little peak on Mont Blanc. A few days later came the news of his fatal fall upon the precipices of the Aiguille Blanche. Since the death of Edward Forbes, no loss outside the circle of his family had affected my father so deeply. For three days he was utterly prostrated, and was scarcely able either to eat or sleep.

There was indeed a subtle affinity between the two men. My mother, who was greatly attached to Francis Balfour, said once to Sir M. Foster, "He has not got the dash and verve, but otherwise he reminds me curiously of what my husband was in his 'Rattlesnake' days." "How strange," replied Sir Michael, "when he first came to the front, Lankester wrote asking me, 'Who is this man Balfour you are always talking about?' and I answered, 'Well, I can only describe him by saying he is a younger Huxley.'"

Writing to Dr. Dohrn on September 24, Huxley says :—

Heavy blows have fallen upon me this year in losing Darwin and Balfour, the best of the old and the best of the young. I am beginning to feel older than my age myself, and if Balfour had lived I should have cleared out of the way as soon as possible, feeling that the future of Zoological Science in this country was very safe in his hands. As it is, I am afraid I may still be of use for some years, and shall be unable to sing my "Nunc dimittis" with a good conscience.

Darwin was in correspondence with him till quite near the end; having received the volume *Science and Culture*, he wrote on January 12, 1882 :—

With respect to automatism,[1] I wish that you could review yourself in the old, and, of course, forgotten, trenchant style, and then you would have [to] answer yourself with equal incisiveness; and thus, by Jove, you might go on *ad infinitum* to the joy and instruction of the world.

And again on March 27 :—

Your most kind letter has been a real cordial to me. . . . Once again accept my cordial thanks, my dear old friend. I wish to God there were more automata in the world like you.

Darwin died on April 19, and a brief notice being required for the forthcoming number of *Nature* on the 27th, Huxley made shift to write a brief article, which is printed in the *Collected Essays*, ii. p. 244. But as neither he nor Sir Joseph Hooker could at the moment undertake a regular obituary notice, this was entrusted to Professor Romanes, to whom the following letters were written.

4 MARLBOROUGH PLACE, *April* 26, 1882.

MY DEAR ROMANES—Thank you for your hearty letter. I spent many hours over the few paragraphs I sent to *Nature*, in trying to express what all who thoroughly knew and therefore loved Darwin, must feel in language which should be absolutely free from rhetoric or exaggeration.

I have done my best, and the sad thing is that I cannot look for

[1] The allusion is to the 1874 address on "Animals as Automata," which was reprinted in *Science and Culture*.

those cheery notes he used to send me in old times, when I had written anything that pleased him.

In case we should miss one another to-day, let me say that it is impossible for me to undertake the obituary in *Nature*. I have a conglomeration of business of various kinds upon my hands just now. I am sure it will be very safe in your hands.—Ever yours very faithfully, T. H. HUXLEY.

Pray do what you will with what I have written in *Nature*.

4 MARLBOROUGH PLACE, *May* 9, 1882.

MY DEAR ROMANES—I feel it very difficult to offer any useful criticism on what you have written about Darwin, because, although it does not quite please me, I cannot exactly say how I think it might be improved. My own way is to write and re-write things, until by some sort of instinctive process they acquire the condensation and symmetry which satisfies me. And I really could not say how my original drafts are improved until they somehow improve themselves.

Two things however strike me. I think there is too much of the letter about Henslow. I should be disposed to quote only the most characteristic passages.

The other point is that I think strength would be given to your panegyric by a little pruning here and there.

I am not likely to take a low view of Darwin's position in the history of science, but I am disposed to think that Buffon and Lamarck would run him hard in both genius and fertility. In breadth of view and in extent of knowledge these two men were giants, though we are apt to forget their services. Von Bär was another man of the same stamp; Cuvier, in a somewhat lower rank, another; and J. Müller another.

"Colossal" does not seem to me to be the right epithet for Darwin's intellect. He had a clear rapid intelligence, a great memory, a vivid imagination, and what made his greatness was the strict subordination of all these to his love of truth.

But you will be tired of my carping, and you had much better write what seems right and just to yourself.—Ever yours very faithfully, T. H. HUXLEY.

Two scientific papers published this year were on subjects connected with his work on the fisheries, one "A contribution to the Pathology of the Epidemic known as the 'Salmon Disease'" read before the Royal Society on the occasion of the Prince of Wales being admitted a Fellow (February 21; *Proc. Roy. Soc.* xxxiii. pp. 381-389); the

other on "Saprolegnia in relation to the Salmon Disease" (*Quarterly Journal of Microscopical Science*, xxii. pp. 311-333). A third, at the Zoological Society, was on the "Respiratory Organs of Apteryx" (*Proc. Z. S.* 1882, pp. 560-569). He delivered an address before the Liverpool Institution on "Science and Art in Relation to Education" (*Coll. Ess.* iii. p. 160), and was busy with the Medical Acts Commission, which reported this year.

The aim of this Commission [1] was to level up the varying qualifications bestowed by nearly a score of different licensing bodies in the United Kingdom, and to establish some central control by the State over the licensing of medical practitioners.

The report recommended the establishments of Boards in each division of the United Kingdom containing representatives of all the medical bodies in the division. These boards would register students, and admit to a final examination those who had passed the preliminary and minor examinations at the various universities and other bodies already granting degrees and qualifications. Candidates who passed this final examination would be licensed by the General Medical Council, a body to be elected no longer by the separate bodies interested in medical education, but by the Divisional Boards.

The report rejected a scheme for joint examination by the existing bodies, assisted by outside examiners appointed by a central authority, on the ground of difficulty and expense, as well as one for a separate State examination. It also provided for compensation from the fees to be paid by the candidates to existing bodies whose revenues might suffer from the new scheme.

To this majority report, six of the eleven Commissioners appended separate reports, suggesting other methods for carrying out the desired end. Among the latter was Huxley, who gave his reasons for dissenting from the principle assumed by his colleagues, though he had signed the main report as embodying the best means of carrying out a reform, that principle being granted.

[1] For a fuller account of this Commission and the part played in it by Huxley, see his "State and Medical Education" (*Coll. Ess.* iii. 323), published 1884.

"The State examination," he thought, "was ideally best, but for many reasons impossible." But the "conjoint scheme" recommended in the report appeared to punish the efficient medical authorities for the abuses of the inefficient. Moreover, if the examiners of the Divisional Board did not affiliate themselves to any medical authority, the compensation to be provided would be very heavy; if they did, "either they will affiliate without further examination, which will give them the pretence of a further qualification, without any corresponding reality, or they will affiliate in examination, in which case the new examination deprecated by the general voice of the profession will be added, and any real difference between the plan proposed and the 'State examination' scheme will vanish."

The compensation proposed, too, would chiefly fall to the discredited bodies, who had neglected their duties.

> The scheme (he writes in his report), which I ventured to suggest is of extreme simplicity; and while I cannot but think that it would prove thoroughly efficient, it interferes with no fair vested interest in such a manner as to give a claim for compensation, and it inflicts no burden either in the way of taxation or extra examination on the medical profession.
>
> This proposal is, that if any examining body satisfies the Medical Council (or other State authority), that it requires full and efficient instruction and examination in the three branches of medicine, surgery, and midwifery; and if it admits a certain number of coadjutor examiners appointed by the State authority, the certificate of that authority shall give admission to the Medical Register.
>
> I submit that while the adopting this proposal would secure a practically uniform minimum standard of examination, it would leave free play to the individuality of the various existing or future universities and medical corporations; that the revenues of such bodies derived from medical examinations would thenceforth increase or diminish in the ratio of their deserts; that a really efficient inspection of the examinations would be secured, and that no one could come upon the register without a complete qualification.

That there was no difficulty in this scheme was shown by the experience of the Scotch Universities; and the expense would be less than the proposed compensation tax.

The chief part of the summer vacation Huxley spent at Lynton, on the north coast of Devonshire. "The Happy

Family," he writes to Dr. Dohrn, "has been spending its vacation in this pretty place, eighteen miles of up hill and down dale from any railway." It was a country made for the long rambles he delighted in after the morning's due allowance of writing. And although he generally preferred complete quiet on his holidays, with perfect freedom from all social exigencies, these weeks of rest were rendered all the pleasanter by the unstudied and unexacting friendliness of the family party which centred around Mr. and Mrs. F. Bailey of Lee Abbey hard by—Lady Tenterden, the Julius, and the Henry Pollocks, the latter old friends of ours.

Though his holiday was curtailed at either end, he was greatly set up by it, and writes to chaff his son-in-law for taking too little rest—

> I was glad to hear that F. had stood his fortnight's holiday so well; three weeks might have knocked him up!

On the same day, September 26, he wrote the letter to Dr. Dohrn, mentioned above, answering two inquiries—one as to arrangements for exhibiting at the Fisheries Exhibition to be held in London the following year, the other as to whether England would follow the example of Germany and Italy in sending naval officers to the Zoological Station at Naples to be instructed in catching and preserving marine animals for the purposes of scientific research.

> With respect to question No. 2, I am afraid my answer must be less hopeful. So far as the British Admiralty is represented by the ordinary British admiral, the only reply to such a proposition as you make that I should expect would be that he (the British admiral, to wit) would see you d——d first. However, I will speak of the matter to the Hydrographer, who really is interested in science, at the first opportunity.

For many years before this, and until the end of his life, there was another side to his correspondence which deserves mention.

I wish that more of the queer letters, which arrived in never-failing streams, had been preserved. A favourite type was the anonymous letter. It prayed fervently, over four pages, that the Almighty would send him down quick into the pit, and was usually signed simply "A Lady." Others

came from cranks of every species: the man who demonstrated that the world was flat, or that the atmosphere had no weight—an easy proof, for you weigh a bottle full of air; then break it to pieces, so that it holds nothing; weigh the pieces, and they are the same weight as the whole bottle full of air! Or, again, that the optical law of equality between the angle of incidence and the angle of reflection is a delusion, whence it follows that all our established latitudes are incorrect, and the difference of temperature between Labrador and Ireland, nominally on the same parallel, is easily accounted for. Then came the suggestions of little pieces of work that might so easily be undertaken by a man of Huxley's capacity, learning, and energy. Enormous manuscripts were sent him with a request that he would write a careful criticism of them, and arrange for their publication in the proceedings of some learned society or first-rate magazine. One of the most delightful came this year. A doctor in India, having just read *John Inglesant*, begged Professor Huxley to do for Science what Mr. Shorthouse had done for the Church of England. As for the material difficulties in the way of getting such a book written in the midst of other work, the ingenious doctor suggested the use of a phonograph driven by a gas-engine. The great thoughts dictated into it from the comfort of an armchair, could easily be worked up into novel shape by a collaborator.

India, again, provided the following application of 1885, made in all seriousness by a youthful Punjaubee with scientific aspirations, who feared to be forced into the law. After an intimate account of his life, he modestly appeals for a post in some scientific institution, where he may get his food, do experiments three or four hours a day, and learn English. Latterly his mental activity had been very great:—"I have been contemplating," he says, "to give a new system of Political Economy to the world. I have questioned, perhaps with success, the validity of some of the fundamental doctrines of H. Spencer's synthetic philosophy," and so on.

Another remarkable communication is a reply-paid telegram from the States, in 1892, which ran as follows:—

Unless all reason and all nature have deceived me, I have found the truth. It is my intention to cross the ocean to consult with those who have helped me most to find it. Shall I be welcome? Please answer at my expense, and God grant we all meet in life on earth.

Another, of British origin this time, was from a man who had to read a paper before a local Literary Society on the momentous question, "Where are we?" so he sent round a circular to various authorities to reinforce his own opinions on the six heads into which he proposed to divide his discourse, viz.:

Where are we in Space?
" " Science?
" " Politics?
" " Commerce?
" " Sociology?
" " Theology?

The writer received an answer, and a mild one:

Any adequate reply to your inquiry would be of the nature of a treatise, and that, I regret, I cannot undertake to write.

Two letters of this year touch on Irish affairs, in which he was always interested, having withal a certain first-hand knowledge of the people and the country they lived in, from his visits there, both as a Fishery Commissioner and on other occasions. He writes warmly to the historian who treated of Ireland without prejudice or rancour.

4 MARLBOROUGH PLACE,
April 16, 1882.

MY DEAR LECKY—Accept my best thanks for your two volumes, which I found on my return from Scotland yesterday.

I can give no better evidence of my appreciation of their contents than by the confession that they have caused me to neglect my proper business all yesterday evening and all to-day.

The section devoted to Irish affairs is a model of lucidity, and bears on its face the stamp of justice and fair dealing. It is a most worthy continuation of the chapter on the same subject in the first volume, and that is giving high praise.

You see I write as if I knew something about the subject, but you are responsible for creating the delusion.

With kindest remembrances to Mrs. Lecky—Ever yours very faithfully, T. H. HUXLEY.

A few weeks later, the murder of Lord Frederick Cavendish sent a thrill of horror throughout England. Huxley was as deeply moved as any, but wrote calmly of the situation.

TO HIS ELDEST SON

4 MARLBOROUGH PLACE,
May 9, 1882.

MY DEAR LEONARD—Best thanks for your good wishes.[1] Notwithstanding the disease of A.D., which always proves mortal sooner or later, I am in excellent case. . . .

I knew both Lord F. Cavendish and his wife and Mr. Burke. I have never been able to get poor Lady Frederick out of my head since the news arrived.

The public mind has been more stirred than by anything since the Indian Mutiny. But if the Government keep their heads cool, great good may come out of the evil, horrible as it is. The Fenians have reckoned on creating an irreparable breach between England and Ireland. It should be our business to disappoint them first and extirpate them afterwards. But the newspaper writers make me sick, especially the *Times*.—Ever your affectionate father,

T. H. HUXLEY.

It is interesting, also, to see how he appeared about this time to one of a younger generation, acute, indeed, and discriminating, but predisposed by circumstances and upbringing to regard him at first with curiosity rather than sympathy. For this account I am indebted to one who has the habit, so laudable in good hands, of keeping a journal of events and conversations. I have every confidence in the substantial accuracy of so well trained a reporter.

EXTRACT FROM JOURNAL

Nov. 25, 1882.

In the evening we dined at the ——'s, chiefly a family party with the addition of Professor Huxley and his wife and ourselves. Much lively conversation, after dinner, begun among the ladies, but continued after the gentlemen appeared, on the subjects of Truth, Education, and Women's Rights, or, more strictly speaking, women's capabilities. Our hostess (Lady ——) was, if possible, more

[1] For his birthday, May 4.

vehement and paradoxical than her wont, and vigorously maintained that *truth* was no virtue in itself, but must be inculcated for expediency's sake. The opposite view found a champion in Professor Huxley, who described himself as "almost a fanatic for the sanctity of truth." Lady —— urged that truth was often a very selfish virtue, and that a man of noble and unselfish character might lie for the sake of a friend, to which some one replied that after a course of this unselfish lying the noble character was pretty sure to deteriorate, while the Professor laughingly suggested that the owner had a good chance of finding himself landed ultimately in Botany Bay.

The celebrated instance of John Inglesant's perjury for the sake of Charles I. was then brought forward, and it was this which led Professor Huxley to say that in his judgment no one had the right passively to submit to a false accusation, and that "moral suicide" was as blameworthy as physical suicide. "He may refuse to commit another, but he ought not to allow himself to be believed worse than he actually is. It is a loss to the world of *moral force*, which cannot be afforded."

. . . Then as regards women's powers. The Professor said he did not believe in their ever succeeding in a competition with men. Then he went on:—"I can't help looking at women with something of the eye of a physiologist. Twenty years ago I thought the womanhood of England was going to the dogs," but now, he said, he observed a wonderful change for the better. We asked to what he attributed it. Was it to lawn tennis and the greater variety of bodily exercises? "Partly," he answered, "but much more to their having more *pursuits*—more to interest them and to occupy their thoughts and time."

The following letter bears upon the question of employing retired engineer officers in administrative posts in the Science and Art Department:—

THE ROOKERY, LYNTON,
Sept. 19, 1882.

MY DEAR DONNELLY—Your letter seems to have arrived here the very day I left for Whitby, whither I had to betake myself to inspect a weir, so I did not get it until my return last night.

I am extremely sorry to hear of the possibility of Martin's giving up his post. He took so much interest in the work and was so very pleasant to deal with, that I do not think we shall easily find any one to replace him.

If you will find another R.E. at all like him, in Heaven's name catch him and put him in, job or no job.

The objection to a small clerk is that we want somebody who knows how to deal with men, and especially young men on the one

hand, and especially cantankerous (more or less) old scientific buffers on the other.

The objection to a man of science is that (1) we want a man of business and not a m.s., and (2) that no man scientifically worth having that I know of is likely to take such an office.

"As at present advised" I am all for an R.E., so I cannot have the pleasure even of trying to convert you.

With our united kindest regards—Ever yours very faithfully,

T. H. HUXLEY.

I return next Monday.

Two letters of thanks follow, one at the beginning of the year to Mr. Herbert Spencer for the gift of a very fine photograph of himself; the other, at the end of the year, to Mr. (afterwards Sir John) Skelton, for his book on Mary Queen of Scots and the Casket Letters.

As to the former, it must be premised that Mr. Spencer abhorred exaggeration and inexact talk, and would ruthlessly prick the airy bubbles which endued the conversation of the daughters of the house with more buoyancy than strict logic, a gift which, he averred, was denied to woman.

4 MARLBOROUGH PLACE,
Jan. 25, 1882.

MY DEAR SPENCER—Best thanks for the photograph. It is very good, though there is just a touch of severity in the eye. We shall hang it up in the dining-room, and if anybody is guilty of exaggerated expressions or bad logic (five womenkind habitually sit round that table), I trust they will feel that that eye is upon them.—Ever yours very faithfully, T. H. HUXLEY.

MARLBOROUGH PLACE, N.W.,
Dec. 31, 1882.

MY DEAR SKELTON—If I may not thank you for the book you have been kind enough to send me, I may at anyrate wish you and Mrs. Skelton a happy New Year and many on 'em.

I am going to read your vindication of Mary Stuart as soon as I can. Hitherto I am sorry to say I have classed her with Eve, Helen, Cleopatra, Delilah, and sundry other glorious ——s who have lured men to their destruction.

But I am open to conviction, and ready to believe that she blew up her husband only a little more thoroughly than other women do, by reason of her keener perception of logic.—Ever yours very faithfully, T. H. HUXLEY.

CHAPTER IV

1883

THE pressure of official work, which had been constantly growing since 1880, reached its highest point in 1883. Only one scientific memoir[1] was published by him this year, and then no more for the next four years. The intervals of lecturing and examining were chiefly filled by fishery business, from which, according to his usual custom when immersed in any investigation, he chose the subject, "Oysters and the Oyster Question," both for his Friday evening discourse at the Royal Institution on May 11, and for his course to Working Men between Jan. 8 and Feb. 12.

There are the usual notes of all seasons at all parts of England. A deserted hotel at Cromer in January was uninviting.

My windows look out on a wintry sea, and it is bitter cold. Notwithstanding, a large number of the aquatic gentlemen to whom I shall have the pleasure of listening, by and by, are loafing against the railings opposite, as only fishermen can loaf.

In April he had been ill, and his wife begged him to put off some business which had to be done at York. But unless absolutely ordered to bed by his doctor, nothing would induce him to put personal convenience before public duty. However, he took his son to look after him.

I am none the worse for my journey (he writes from York) rather the better; so Clark is justified, and I should have failed in

[1] Contributions to Morphology, Ichthyopsida, No. 2. On the Oviducts of Osmerus; with remarks on the relations of the Teleostean with the Ganoid Fishes (*Proc. Zool. Soc.* 1883, pp. 132-139).

my duty if I had not come. H. looks after me almost as well as you could do.

To make amends, fishery business in the west country during a fine summer had "a good deal of holiday in it," though a cross journey at the beginning of August from Abergavenny to Totness made him write:—

If ever (except to-morrow, by the way) I travel within measurable distance of a Bank Holiday by the Great Western, may jackasses sit on my grandmother's grave.

As the business connected with the Inspectorship had been enlarged in the preceding years by exhibitions at Norwich and Edinburgh, so it was enlarged this year, and to a still greater extent, by the Fisheries Exhibition in London. This involved upon him as Commissioner, not only the organisation of the Conference on Fish Diseases and the paper on the Diseases of Fish already mentioned, but administration, committee meetings, and more—a speech on behalf of the Commissioners in reply to the welcome given them by the Prince of Wales at the opening of the exhibition. On the following day he expressed his feelings at this mode of spending his time in a letter to Sir M. Foster.

I am dog-tired with yesterday's function. Had to be at the Exhibition in full fig at 10 A.M., and did not get home from the Fishmongers' dinner till 1.20 this morning.

Will you tell me what all this has to do with my business in life, and why the last fragments of a misspent life that are left to me are to be frittered away in all this drivel?—Yours savagely,

T. H. H.

Later in the year, also, he had to serve on another Fishery Commission much against his will, though on the understanding that, in view of his other engagements, he need not attend all the sittings.

A more satisfactory result of the Exhibition was that he found himself brought into close contact with several of the great city companies, whose enormous resources he had long been trying, not without some success, to enlist on behalf of technical and scientific education.

Among these may be noted the Fishmongers, the

Mercers, who had already interested themselves in technical education, and gave their hall for the meetings of the City and Guilds Council, of which Huxley was an active member; the Clothworkers, in whose schools he distributed the prizes this year; and, not least, the Salters, who presented him with their freedom on November 13. Their master, Mr. J. W. Clark, writing in August, after Huxley had accepted their proposal, says: "I think you must admit that the City Companies have yielded liberally to the gentle compression you have exercised on them. So far from helping you to act the traitor, we propose to legitimise your claim for education, which several of us shall be willing to unite with you in promoting" (see vol. i. p. 474).

The crowning addition, however, to Huxley's official work was the Presidency of the Royal Society. He had resigned the Secretaryship in 1880, after holding office for nine years under three Presidents—Airy, Hooker, and Spottiswoode. Spottiswoode, like Hooker, was a member of the *x* Club, and was regarded with great affection and respect by Huxley, who in 1887 wrote of him to Mr. John Morley:—

> It is quite absurd you don't know Spottiswoode, and I shall do both him and you a good turn by bringing you together. He is one of my best friends, and comes under the A1 class of "people with whom you may go tiger-hunting."

On June 7, writing to Professor (afterwards Sir E.) Frankland, he says:—

> You will have heard that Spottiswoode is seriously ill. The physicians suspect typhoid, but are not quite certain. I called this morning, and hear that he remains much as he has been for the last two or three days. So many of our friends have dropped away in the course of the last two years that I am perhaps morbidly anxious about Spottiswoode, but there is no question that his condition is such as to cause grave anxiety.

But by the end of the month his fears were realised. Consequently it devolved upon the Council of the Royal Society to elect one of their own body to hold office until the St. Andrew's Day following, when a regular President would be elected at a general meeting of the Society.

Huxley himself had no wish to stand. He writes to Sir M. Foster on June 27, announcing Spottiswoode's death, which had taken place that morning:—

> It is very grievous in all ways. Only the other day he and I were talking of the almost miraculous way in which the *x* Club had held together without a break for some 18 years, and little did either of us suspect that he would be the first to go.
>
> A heavy responsibility falls on you in the Royal Society. It strikes me you will have to call another meeting of the Council before the recess for the consideration of the question of the Presidency. It is hateful to talk of these things, but I want you to form some notion of what had best be done as you come up to-morrow.
>
> —— is a possibility, but none of the other officers I think.

Indeed, he wished to diminish his official distractions rather than to increase them. His health was unlikely to stand any additional strain, and he longed to devote the remainder of his working years to his unfinished scientific researches. But he felt very strongly that the President of the Royal Society ought to be chosen for his eminence in science, not on account of social position, or of wealth, even though the wealth might have been acquired through the applications of science. The acknowledgment of this principle had led some years back to the great revolution from within, which succeeded in making the Society the living centre and representative of science for the whole country, and he was above all things anxious that the principle should be maintained. He was assured, however, from several quarters that unless he allowed himself to be put forward, there was danger lest the principle should be disregarded.

Moved by these considerations of public necessity, he unwillingly consented to be nominated, but only to fill the vacancy till the general meeting, when the whole Society could make a new choice. Yet even this limitation seemed difficult to maintain in the face of the widely expressed desire that he would then stand for the usual period of five years. "The worst of it is," he wrote to Sir M. Foster on July 2, "that I see myself gravitating towards the Presidency *en permanence*, that is to say, for the ordinary period. And

that is what I by no means desired. —— has been at me (as a sort of deputation, he told me, from a lot of the younger men) to stand. However, I suppose there is no need to come to any decision yet."

The following letters, in reply to congratulations on his election, illustrate his attitude of mind in the affair :—

TO THE WARDEN OF MERTON

HINDHEAD, *July* 8, 1883.

MY DEAR BRODRICK—I do not get so many pleasant letters that I can afford to leave the senders of such things unthanked.

I am very much obliged for your congratulations, and I may say that I accepted the office *inter alia* for the purpose of getting people to believe that such places may be properly held by people who have neither riches nor station—who want nothing that statesmen can give—and who care for nothing except upholding the dignity and the freedom of science.—Ever yours very faithfully,

T. H. HUXLEY.

TO SIR W. H. FLOWER, F.R.S.

4 MARLBOROUGH PLACE, *July* 7, 1883.

MY DEAR FLOWER—I am overwhelmed by the kind letters I get from all sides, and I need hardly say that I particularly value yours.

A month ago I said that I ought not, could not, and would not take the Presidency under any circumstances whatever. My wife was dead against it, and you know how hen-pecked I am.

Even when I was asked to take the Presidency to the end of the year and agreed, I stipulated for my freedom next St. Andrew's Day.

But such strong representations were made to me by some of the younger men about the dangers of the situation, that at the last moment almost I changed my mind.

However, I wanted it to be clearly understood that the Council and the Society are, so far as I am concerned, perfectly free to put somebody else in my place next November. All I stipulate for is that my successor shall be a man of science.

I will not, if I can help it, allow the chair of the Royal Society to become the apanage of rich men, or have the noble old Society exploited by enterprising commercial gents who make their profit out of the application of science.

Mrs. President was *not* pleased—quite the contrary—but she is mollified by the kindly expressions, public and private, which have received the election.

And there are none which we both value more than yours. (I see I said that before, but I can't say it too often.)—Ever yours very faithfully, T. H. HUXLEY.

HINDHEAD, *July* 8, 1883.

MY DEAR FLOWER—Many thanks for your comforting letter. When I am fairly committed to anything I generally have a cold fit—and your judgment that I have done right is "grateful and comforting" like Epps' Cocoa. It is not so much work as distraction that is involved; and though it may put a stop to my purely scientific work for a while, I don't know that I could be better employed in the interests of science than in trying to keep the Royal Society straight.

My wife was very much against it at first—and indeed when I was first spoken to I declared that I would not go on after next St. Andrew's Day. But a good deal of pressure was brought to bear by some of my friends, and if the Fellows don't turn me out I shall say with MacMahon, "J'y suis et j'y reste."—Ever yours very faithfully, T. H. HUXLEY.

We have run down here for a day, but are back to-morrow.

4 MARLBOROUGH PLACE, *July* 10, 1883.

MY DEAR SPENCER—What an agreeable surprise your letter has been. I have been expecting the most awful scolding for taking more work, and behold as sweetly congratulatory an epistle as a man could wish.

Three weeks ago I swore by all my gods that I would not take the offer at any price, but I suppose the infusion of Theism was too homœopathic for the oath to bind.

Go on sleeping, my dear friend. If you are so amiable with three nights, what will you be with three weeks?

What a shame no rain is sent you. You will be speaking about Providence as I heard of a Yankee doing the other day—"Wal, sir, I guess he's good; but he's careless."

I think there is a good deal in that view of the government of the world.—Ever yours very faithfully, T. H. HUXLEY.

TO HIS ELDEST DAUGHTER

4 MARLBOROUGH PLACE, *July* 14, 1883.

DEAREST JESS—I am not sure either whether my accession to the Presidency is a matter for congratulation. Honour and glory are all very fine, but on the whole I prefer peace and quietness, and three weeks ago I declared I would have nothing to do with it.

But there are a good many circumstances in the present state of affairs which weighed heavily in the scale, and so I made up my mind to try the experiment.

If I don't suit the office or the office don't suit me, there is a way out every 30th of November.

There was more work connected with the Secretaryship—but there is more trouble and responsibility and distraction in the Presidency.

I am amused with your account of your way of governing your headstrong boy. I find the way of governing headstrong men to be very similar, and I believe it is by practising the method that I get the measure of success with which people credit me.

But they are often very fractious, and it is a bother for a man who was meant for a student.

Poor Spottiswoode's death was a great blow to me. Never was a better man, and I hoped he would stop where he was for the next ten years. . . .—Ever your loving father, T. H. HUXLEY.

He finally decided that the question of standing again in November must depend on whether this course was likely to cause division in the ranks of the Society. He earnestly desired to avoid anything like a contest for scientific honours;[1] he was almost morbidly anxious that the temporary choice of himself should not be interpreted as binding the electors in any way.

I give the following letters to show his sensitiveness on every question of honour and of public advantage:—

BRECHIN CASTLE, BRECHIN, N.B.,
Sept. 19, 1883.

MY DEAR FOSTER—We got here yesterday. The Commission does not meet till next week, so like the historical donkey of Jeshurun I have nothing to do but to wax fat and kick in this excellent pasture.

At odd times lately my mind has been a good deal exercised about the Royal Society. I am quite willing to go on in the chair if the Council and the Society wish it. But it is quite possible that the Council who chose me when the choice was limited to their own body, might be disposed to select some one else when the range of choice is extended to the whole body of the Society. And I am

[1] As he wrote a little later:—"I have never competed in the way of honour in my life, and I cannot allow myself to be even thought of as in such a position now, where, with all respect to the honour and glory, they do not appear to me to be in any way equivalent to the burden. And I am not at all sure that I may not be able to serve the right cause outside the Chair rather than in it."

very anxious that the Council should be made to understand, when the question comes forward for discussion after the recess, that the fact of present tenancy constitutes no claim in my eyes.

The difficulty is, how is this to be done? I cannot ask the Council to do as they please, without reference to me, because I am bound to assume that that is what they will do, and it would be an impertinence to assume the contrary.

On the other hand, I should at once decline to be put in nomination again, if it could be said that by doing so I had practically forced myself either upon the Council or upon the Society.

Heaven be praised I have not many enemies, but the two or three with whom I have to reckon don't stick at trifles, and I should not like by any inadvertence to give them a handle.

I have had some thought of writing a letter to Evans,[1] such as he could read to the Council at the first meeting in October, at which I need not be present.

The subject could then be freely discussed, without any voting or resolution on the minutes, and the officers could let me know whether in their judgment it is expedient I should be nominated or not.

In the last case I should withdraw on the ground of my other occupations—which, in fact, is a very real obstacle, and one which looms large in my fits of blue-devils, which have been more frequent of late than they should be in holiday time.

Now, will you turn all this over in your mind? Perhaps you might talk it over with Stokes.

Of course I am very sensible of the honour of being P.R.S., but I should be much more sensible of the dishonour of being in that place by a fluke, or in any other way, than by the free choice of the Council and Society.

In fact I am inclined to think that I am morbidly sensitive on the last point; and so, instead of acting on my own impulse, as I have been tempted to do, I submit myself to your worship's wisdom.

I am not sure that I should not have been wiser if I had stuck to my original intention of holding office only till St. Andrew's Day.
—Ever yours very faithfully, T. H. HUXLEY.

SECRETARY OF STATE, HOME DEPARTMENT,
Oct. 3, 1883.

MY DEAR FOSTER—There was an Irish bricklayer who once bet a hodman he would not carry him up to the top of an exceeding high ladder in his hod. The hodman did it, but Paddy said, "I had great hopes, now, ye'd let me fall just about six rounds from the top."

[1] Sir John Evans, K.C.B., then Treasurer of the Royal Society.

I told the story before when I was up for the School Board, but it is so applicable to the present case that I can't help coming out with it again.

If you, dear good hodmen, would have but let me fall!

However, as the thing is to be, it is very pleasant to find Evans and Williamson and you so hearty in the process of elevation, and in spite of blue-devils I will do my best to "do my duty in the state of life I'm called to."

But I believe you never had the advantage of learning the Church Catechism.

If there is any good in what is done you certainly deserve the credit of it, for nothing but your letter stopped me from kicking over the traces at once. Do you see how Evolution is getting made into a bolus and oiled outside for the ecclesiastical swallow?[1]—Ever thine, THOMAS, P.R.S.

The same feeling appears in his anxiety as President to avoid the slightest appearance of committing the Society to debatable opinions which he supported as a private individual. Thus, although he had "personally, politically, and philosophically" no liking for Charles Bradlaugh, he objected on general grounds to the exclusion of Mrs. Besant and Miss Bradlaugh from the classes at University College, and had signed a memorial in their favour. On the other hand, he did not wish it to be asserted that the Royal Society, through its President, had thrown its influence into what was really a social and political, not a scientific question. He writes to Sir M. Foster on July 18:—

It is very unlucky for me that I signed the memorial requesting the Council of University College to reconsider their decision about Mrs. Besant and Miss Bradlaugh when I was quite innocent of my possibility of holding the P.R.S.

I must go to the meeting of members to-day and define my position in the matter with more care, under the circumstances.

Mrs. Besant was a student in my teacher's class here last year, and a very well-conducted lady-like person; but I have never been able to get hold of the "Fruits of Philosophy," and do not know to what doctrine she has committed herself.

They seem to have excluded Miss Bradlaugh simply on the *noscitur a sociis* principle.

It will need all the dexterity I possess to stand up for the

[1] This refers to papers read before the Church Congress that year by Messrs. W. H. Flower and Legros Clarke.

principle of religious and philosophical freedom, without giving other people a hold for saying that I have identified myself with Bradlaugh.

It was the same a little later with the Sunday Society, which had offered him its presidency. He writes to the Hon. Sec. on Feb. 11, 1884:—

I regret that it is impossible for me to accept the office which the Sunday Society honours me by offering.

It is not merely a disinclination to add to the work which already falls to my share which leads me to say this. So long as I am President of the Royal Society, I shall feel bound to abstain from taking any prominent part in public movements as to the propriety of which the opinions of the Fellows of the Society differ widely.

My own *opinions* on the Sunday question are exactly what they were five-and-twenty years ago. They had not been hid under a bushel, and I should not have accepted my present office if I had felt that so doing debarred me from reiterating them whenever it may be necessary to do so.

But that is a different matter from taking a step which would, in the eyes of the public, commit the Royal Society, through its President, to one side of the controversy in which you are engaged, and in which I, personally, hope you may succeed as warmly as ever I did.

One other piece of work during the first half of the year remains to be mentioned, namely, the Rede Lecture, delivered at Cambridge on June 12. This was a discourse on Evolution, based upon the consideration of the Pearly Nautilus.

He first traced the evolution of the individual from the ovum, and replied to the three usual objections raised to evolution, that it is impossible, immoral, and contrary to the argument of design, by replying to the first, that it does occur in every individual; to the second, that the morality which opposes itself to truth commits suicide; and to the third that Paley—the most interesting Sunday reading allowed him when a boy—had long since answered this objection.

Then he proceeded to discuss the evolution of the 100 species, all extinct but two, of Nautilus. The alternative theory of new construction, a hundred times over, is opposed

alike to tradition and to sane science. On the other hand, evolution, tested by paleontology, proves a sound hypothesis. The great difficulty of science is in tracing every event to those causes which are in present operation; the hypothesis of evolution is analogous to what is going on now.

The summer was passed at Milford, near Godalming, in a house at the very edge of the heather country which from there stretches unbroken past Hindhead and into Wolmer Forest. So well did he like the place that he took it again the following year. But his holiday was like to have been spoilt at the beginning by the strain of an absurd misadventure which involved much fatigue and more anxiety.

I came back only last night (he writes to Sir M. Foster on August 1) from Paris, where I sped on Sunday night, in a horrid state of alarm from a cursed blundering telegram which led me to believe that Leonard (you know he got his first class to our great joy) who had left for the continent on Saturday, was ill or had had an accident.

It was indeed a hurried journey. On receipt of the telegram, he rushed to Victoria only to miss the night mail. The booking-clerk suggested that he should drive to London Bridge, take train to Lewes, and thence take a fly to Newhaven, where he ought to catch a later boat. The problem was to catch the London Bridge train. There was barely a quarter of an hour, but thanks to a good horse and the Sunday absence of traffic, the thing was done, establishing, I believe, what the modern mind delights in, a record in cab-driving. Happily the anxiety at not finding his son in Paris was soon allayed by another telegram from home, where his son-in-law, the innocent sender of the original message, had meanwhile arrived. He writes to Sir M. Foster:—

Judging by my scrawl, which is worse than usual, I should say the anxiety had left its mark, but I am none the worse otherwise.

This was indeed the case. Other letters to Sir M. Foster show that he was unusually well, perhaps because he was really making holiday to some extent. Thus on August 16, he writes:—

This is a lovely country, and I have been reading novels and walking about for the last four days. I must be all right, wind and limb, for I walked over twenty miles the day before yesterday, and except a blister on one heel, was none the worse.

And again on September 12 :—

Have been very lazy lately, which means that I have done a great many things that I need not have done, and have left undone those which I ought to have done. Nowadays that seems to me to be the real definition of a holiday.

For once he was not doing very much holiday work, though he was filing at the Rede Lecture to get it into shape for publication. The examinations for the Science and Art Department were over, and indeed he writes to Sir M. Foster:—

Don't bother your head about the balance—now or hereafter. To tell you the truth I do so little in the Examiner business that I am getting ashamed of taking even the retaining fee, and you will do me a favour if you will ease my conscience.

A week of fishery business in South Wales and Devon had "a good deal of holiday in it." For the rest—

I have just been put on Senate of University of London [a Crown nomination]. I tried hard to get Lord Granville to let me off—in fact I told him I could not attend the meetings except now and then, but there was no escape. I must have a talk with you about what is to be done there.

Item.—There is a new Fishery Commission that I also strongly objected to, but had to cave in so far as I agreed to attend some meetings in latter half of September.

On this occasion Lord Granville had written back :—

11 CARLTON HOUSE TERRACE,
July 28, 1883.

MY DEAR PROFESSOR HUXLEY—Clay, the great whist player, once made a mistake and said to his partner, "My brain is softening," the latter answered, "Never mind, I will give you £10,000 down for it, just as it is."

On that principle and backed up by Paget I shall write to Harcourt on Monday.—Yours sincerely, GRANVILLE.

The Commission of course cut short the stay at Milford, and on September 12, he writes :—

We shall leave this on Friday as my wife has some fal-lals to look after before we start for the north on Monday.

The worst of it is that it is not at all certain that the Commission will meet and do any work. However I am pledged to go and I daresay that Brechin Castle is a very pleasant place to stay in.

Lastly, he was thinking over the obituary notice of Darwin which he had undertaken to write for the Royal Society—though it did not appear till 1888—that on F. Balfour being written by Sir M. Foster.

HIGHCROFT HOUSE, MILFORD, GODALMING,
Aug. 27, 1883.

MY DEAR FOSTER—I do not see anything to add or alter to what you have said about Balfour, except to get rid of that terrible word "urinogenital," which he invented, and I believe I once adopted, out of mere sympathy I suppose.

Darwin is on my mind, and I will see what can be done here by and by. Up to the present I have been filing away at the Rede Lecture. I believe that getting things into shape takes me more and more trouble as I get older—whether it is a loss of faculty or an increase of fastidiousness I can't say—but at any rate it costs me more time and trouble to get things finished—and when they are done I should prefer burning to publishing them.

Haven't you any suggestions to offer for Anniversary address? I think the Secretaries ought to draw it up, like a Queen's speech.

Mind we have a talk some day about University of London. I suppose you want an English Sorbonne. I have thought of it at times, but the Philistines are strong.

Weather jolly, but altogether too hot for anything but lying on the grass "under the tegmination of the patulous fage," as the poet observes.—Ever yours very faithfully, T. H. HUXLEY.

The remaining letters of this year are for the most part on Royal Society business, some of which, touching the anniversary dinner, may be quoted :—

4 MARLBOROUGH PLACE, *Nov.* 10, 1883.

MY DEAR FOSTER— . . . I have been trying to get some political and other swells to come to the dinner. Lord Mayor is coming—thought I would ask him on account of City and Guilds business—Lord Chancellor, probably, Courtney, M.P., promised, and I made

the greatest blunder I ever made in all my life by thoughtlessly writing to ask Chamberlain (!!!) utterly forgetting the row with Tyndall.[1]

By the mercy of Providence he can't come this year, though I must ask him next (if I am not kicked out for my sins before that), as he is anxious to come. Science ought to be in league with the Radicals. . . . Ever yours, T. H. HUXLEY.

He had made prompt confession as soon as he discovered his mistake, to Tyndall himself, who ultimately came to the dinner and proposed the health of his old friend Hirst.

4 MARLBOROUGH PLACE, *Nov.* 9, 1883.

MY DEAR TYNDALL—I have been going to write to you for two or three days to ask you to propose Hirst's health as Royal Medallist on the 30th November. I am sure your doing so would give an extra value to the medal to him.

But now I realise the position of those poor devils I have seen in lunatic asylums and who believed they have committed the unforgivable sin. It came upon me suddenly in Waterloo Place this evening, that I had done so; and I went straight to the Royal Institution to make confession, and if possible get absolution. But I heard you had gone to Hindhead, and so I write.

Yesterday I was sending some invitations to the dinner on the 30th, and thinking to please the Society I made a shot at some ministers. The only two I know much about are Harcourt and Chamberlain, and the devil (in whom I now firmly believe) put it into my head to write to both.

The enormous stupidity of which I had been guilty in asking Chamberlain under the circumstances, and the sort of construction you and others might put upon it, never entered my head till this afternoon. It really made me ill, and I went straight to find you. If Providence is good to me the letter will miscarry and he won't come. But anyhow I want you to know that I have been idiotically stupid, and that I shall wish the Presidency and the dinner and everything connected with it at the bottom of the sea, if you are as much disgusted with me as you have a perfect right to be.—Ever yours faithfully, T. H. HUXLEY.

The following refers to a newly-founded society at Newcastle, which had invited him to become one of its vice-presidents :—

[1] Concerning the Lighthouses.

4 MARLBOROUGH PLACE, N.W.,
Dec. 30, 1883

MY DEAR MORLEY—The Newcastle people wrote to me some time ago telling me that Sir W. Armstrong was going to be their President. Armstrong is an old friend of mine, so I wrote to him to make inquiries. He told me that he was not going to be President, and knew nothing about the people who were getting up the Society. So I declined to have anything to do with it.

However, the case is altered now that you are in the swim. You have no gods to swear by, unfortunately; but if you will affirm, in the name of X, that under no circumstances shall I be called upon to do anything, they may have my name among the V.-P.'s and much good may it do them.

All our good wishes to you and yours. The great thing one has to wish for as time goes on is vigour as long as one lives, and death as soon as vigour flags.

It is a curious thing that I find my dislike to the thought of extinction increasing as I get older and nearer the goal.

It flashes across me at all sorts of times with a sort of horror that in 1900 I shall probably know no more of what is going on than I did in 1800. I had sooner be in hell a good deal—at any rate in one of the upper circles, where the climate and company are not too trying. I wonder if you are plagued in this way.—Ever yours, T. H. H.

The following letters, to his family or to intimate friends, are in lighter vein. The first is to Sir M. Foster; the concluding item of information in reply to several enquiries. The Royal Society wished some borings made in Egypt to determine the depth of the stratum of Nile mud:—

The Egyptian exploration society is wholly archæological—at least from the cut of it I have no doubt it is so—and they want all their money to find out the pawnbrokers' shops which Israel kept in Pithom and Rameses—and then went off with the pledges.

This is the real reason why Pharaoh and his host pursued them; and then Moses and Aaron bribed the post-boys to take out the linch-pins.

That is the real story of the Exodus—as detailed in a recently discovered papyrus which neither Brugsch nor Maspero have as yet got hold of.

TO HIS YOUNGEST DAUGHTER

4 MARLBOROUGH PLACE, N.W.,
April 12, 1883.

DEAREST PABELUNZA—I was quite overcome to-day to find that you had vanished without a parting embrace to your "faded but fascinating"[1] parent. I clean forgot you were going to leave this peaceful village for the whirl of Gloucester dissipation this morning —and the traces of weeping on your visage, which should have reminded me of our imminent parting, were absent.

My dear, I should like to have given you some good counsel. You are but a simple village maiden—don't be taken by the appearance of anybody. Consult your father—inclosing photograph and measurement (in inches)—in any case of difficulty.

Also give my love to the matron your sister, and tell her to look sharp after you. Treat her with more respect than you do your venerable P.—whose life will be gloom hidden by a film of heartless jests till you return.

Item.—Kisses to Ria and Co.—Your desolated Pater.

TO HIS ELDEST DAUGHTER

4 MARLBOROUGH PLACE, *May* 6, 1883.

DEAREST JESS—Best thanks for your good wishes—considering all things I am a hale old gentleman. But I had to speak last night at the Academy dinner, and either that or the quantity of cigars I smoked, following the bad example of our friend "Wales," has left me rather shaky to-day. It was trying, because Jack's capital portrait was hanging just behind me—and somebody remarked that it was a better likeness of me than I was. If you begin to think of that it is rather confusing.

I am grieved to have such accounts of Ethel, and have lectured her accordingly. She threatens reprisals on you—and altogether is in a more saucy and irrepressible state than when she left.

M— is still in bed, though better—I am afraid she won't be able to go to Court next week. You see we are getting grand.

I hear great accounts of the children (Ria and Buzzer) and mean to cut out T'other Governor when you bring them up.

As we did not see Fred the other day, the family is inclined to think that the salmon disagreed with him!—Ever your loving father, T. H. HUXLEY.

[1] A fragment of feminine conversation overheard at the Dublin meeting of the British Association, 1878. "Oh, there comes Professor Huxley: faded, but still fascinating."

4 MARLBOROUGH PLACE, *May* 10, 1883.

MY DEAR MRS. TYNDALL,—If you will give me a bit of mutton at one o'clock I shall be very much your debtor, but as I have business to attend to afterwards at the Home Office I must stipulate that my intellect be not imperilled by those seductive evil genii who are apt to make their appearance at your lunch table.[1]

M. is getting better, but I cannot let her be out at night yet. She thinks she is to be allowed to go to the International Exhibition business on Saturday; but if the temperature does not rise very considerably I shall have two words to say to that.—Ever yours very sincerely, T. H. HUXLEY.

I shall be alone. Do you think that I am "subdued to that I work in," and like an oyster, carry my brood about beneath my mantle?

[1] This is accompanied by a sketch of a champagne bottle in the character of a demon.

CHAPTER V

1884

FROM this time forward the burden of ill-health grew slowly and steadily. Dyspepsia and the hypochondriacal depression which follows in its train, again attacked Huxley as they had attacked him twelve years before, though this time the physical misery was perhaps less. His energy was sapped; when his official work was over, he could hardly bring himself to renew the investigations in which he had always delighted. To stoop over the microscope was a physical discomfort; he began to devote himself more exclusively to the reading of philosophy and critical theology. This was the time of which Sir M. Foster writes that "there was something working in him which made his hand, when turned to anatomical science, so heavy that he could not lift it. Not even that which was so strong within him, the duty of fulfilling a promise, could bring him to the work."

Up to the beginning of October, he went on with his official work, the lectures at South Kensington, the business as President of the Royal Society, and *ex officio* Trustee of the British Museum; the duties connected with the Inspectorship of Fisheries, the City and Guilds Technical Education Committee, and the University of London, and delivered the opening address at the London Hospital Medical School, on "The State and the Medical Profession" (*Coll. Ess.* iii. 323), his health meanwhile growing less and less satisfactory. He dropped minor offices, such as the Presidency of the National Association of Science Teachers, which, he considered, needed more careful supervision than he was able to give, and

meditated retiring from part at least of his main duties when he was ordered abroad at a moment's notice for first one, then another, and yet a third period of two months. But he did not definitely retire until this rest had proved ineffectual to fit him again for active work.

The President of the Royal Society is, as mentioned above, an *ex officio* Trustee of the British Museum, so that now, as again in 1888, circumstances at length brought about the state of affairs which Huxley had once indicated—half jestingly—to Robert Lowe, who inquired of him what would be the best course to adopt with respect to the Natural History collections of the British Museum :—"Make me a Trustee and Flower director." At this moment, the question of an official residence for the Director of the Natural History Museum was under discussion with the Treasury, and he writes :—

Feb. 29, 1884.

MY DEAR FLOWER—I am particularly glad to hear your news. "Ville qui parle et femme qui écoute se rendent," says the wicked proverb—and it is true of Chancellors of the Exchequer.—Ever yours very faithfully, T. H. HUXLEY.

A pendent to this is a letter of congratulation to Sir Henry Roscoe on his knighthood :—

SCIENCE AND ART DEPARTMENT, S.K.,
July 7, 1884.

MY DEAR ROSCOE—I am very glad to see that the Government has had the grace to make some acknowledgment of their obligation to you, and I wish you and "my lady" long enjoyment of your honours. I don't know if you are gazetted yet, so I don't indicate them outside.—Ever yours very faithfully, T. H. HUXLEY.

P.S.—I wrote some weeks ago to the Secretary of the National Association of Science Teachers to say that I must give up the Presidency. I had come to the conclusion that the Association wants sharp looking after, and that I can't undertake that business.

P.S. 2.—Shall I tell you what your great affliction henceforward will be? It will be to hear yourself called Sr'enery Roscoe by the flunkies who announce you.

Her Ladyship will please take note of this crumpled rose leaf—I am sure of its annoying her.

The following letter, with its comparison of life to a

whirlpool and its acknowledgment of the widespread tendency in mankind to make idols, was written in answer to some enquiries from Lady Welby:—

April 8, 1884.

Your letter requires consideration, and I have had very little leisure lately. Whether motion disintegrates or integrates is, I apprehend, a question of conditions. A whirlpool in a stream may remain in the same spot for any imaginable time. Yet it is the effect of the motion of the particles of the water in that spot which continually integrate themselves into the whirlpool and disintegrate themselves from it. The whirlpool is permanent while the conditions last, though its constituents incessantly change. Living bodies are just such whirlpools. Matter sets into them in the shape of food,—sets out of them in the shape of waste products. Their individuality lies in the constant maintenance of a characteristic form, not in the preservation of material identity. I do not know anything about "vitality" except as a name for certain phenomena like "electricity" or "gravitation." As you get deeper into scientific questions you will find that "Name ist Schall und Rauch" even more emphatically than Faust says it is in Theology. Most of us are idolators, and ascribe divine powers to the abstractions "Force," "Gravity," "Vitality," which our own brains have created. I do not know anything about "inert" things in nature. If we reduce the world to matter and motion, the matter is not "inert," inasmuch as the same amount of motion affects different kinds of matter in different ways. To go back to my own illustration. The fabric of the watch is not inert, every particle of it is in violent and rapid motion, and the winding-up simply perturbs the whole infinitely complicated system in a particular fashion. Equilibrium means death, because life is a succession of changes, while a changing equilibrium is a contradiction in terms. I am not at all clear that a living being is comparable to a machine running down. On this side of the question the whirlpool affords a better parallel than the watch. If you dam the stream above or below, the whirlpool dies; just as the living being does if you cut off its food, or choke it with its own waste products. And if you alter the sides or bottom of the stream you may kill the whirlpool, just as you kill the animal by interfering with its structure. Heat and oxidation as a source of heat appear to supply energy to the living machine, the molecular structure of the germ furnishing the "sides and bottom of the stream," that is, determining the results which the energy supplied shall produce.

Mr. Ashby writes like a man who knows what he is talking about. His exposition appears to me to be essentially sound and extremely well put. I wish there were more sanitary officers of the

same stamp. Mr. Spencer is a very admirable writer, and I set great store by his works. But we are very old friends, and he has endured me as a sort of "devil's-advocate" for thirty-odd years. He thinks that if I can pick no holes in what he says he is safe. But I pick a great many holes, and we agree to differ.

Between April and September, Fishery business took him out of London for no less than forty-three days, first to Cornwall, then in May to Brixham, in June to Cumberland and Yorkshire, in July to Chester, and in September to South Devon, Cornwall, and Wales. A few extracts from his letters home may be given. Just before starting, he writes from Marlborough Place to Rogate, where his wife and one of his daughters were staying :—

April 8.—The weather turned wonderfully muggy here this morning, and turned me into wet paper. But I contrived to make a "neat and appropriate" in presenting old Hird with his testimonial. Fayrer and I were students under him forty years ago, and as we stood together it was a question which was the greyest old chap.

April 14.—I have almost given up reading the Egyptian news, I am so disgusted with the whole business. I saw several pieces of land to let for building purposes about Falmouth, but did not buy any. (This was to twit his wife with her constant desire that he should buy a bit of land in the country to settle upon in their old age.)

April 18.—You don't say when you go back, so I direct this to Rogate. I shall expect to see you quite set up. We must begin to think seriously about getting out of the hurly-burly a year or two hence, and having an Indian summer together in peace and quietness.

April 15, *Sunday, Falmouth.*—I went out at ten o'clock this morning, and did not get back till near seven. But I got a cup of tea and some bread and butter in a country village, and by the help of that and many pipes supported nature. There was a bitter east wind blowing, but the day was lovely otherwise, and by judicious dodging in coves and creeks and sandy bays, I escaped the wind and absorbed a prodigious quantity of sunshine.

I took a volume of the *Decline and Fall of the Roman Empire* with me. I had not read the famous 15th and 16th chapters for ages, and I lay on the sands and enjoyed them properly. A lady came and spoke to me as I returned, who knew L. at Oxford very well—can't recollect her name—and her father and mother are here, and I have just been spending an hour with them. Also a man who sat by me at dinner knew me from Jack's portrait. So my incognito is not very good. I feel quite set up by my day's wanderings.

May 11, *Torquay*.—We went over to Brixham yesterday to hold an inquiry, getting back here to an eight-o'clock or nearer nine dinner. . . . Dalhousie has discovered that the officer now in command of the *Britannia* is somebody whom he does *not* know, so we gave up going to Dartmouth and agreed to have a lazy day here. It is the most exquisite summer weather you can imagine, and I have been basking in the sun all the morning and dreamily looking over the view of the lovely bay which is looking its best—but take it all round it does not come up to Lynton. Dalhousie is more likeable than ever, and I am just going out for a stroll with him.

June 24.—I left Keswick this morning for Cockermouth, took the chair at my meeting punctually at twelve, sat six mortal hours listening to evidence, nine-tenths of which was superfluous—and turning my lawyer faculty to account in sifting the grains of fact out of the other tenth.

June 25, *Leeds*.—. . . We had a long drive to a village called Harewood on the Wharfe. There is a big Lord lives there—Earl of Harewood—and he and his ancestors must have taken great care of their tenants, for the labourers' houses are the best I ever saw. . . . I cut out the enclosed from the *Standard* the other day to amuse you, but have forgotten to send it before.[1] I think we will be "Markishes," the lower grades are getting common.

June 27.—. . . I had a long day's inspection of the Wharfe yesterday, attended a meeting of the landed proprietors at Ottley to tell them what they must do if they would get salmon up their river. . . .

I shall leave here to-morrow morning, go on to Skipton, whence seven or eight miles' drive will take me to Linton where there is an obstruction in the river I want to see. In the afternoon I shall come home from Skipton, but I don't know exactly by what train. As far as I see, I ought to be home by about 10.30, and you may have something light for supper, as the "course of true feeding is not likely to run smooth"—to-morrow.

In August he went again to the corner of Surrey which he had enjoyed so much the year before. Here, in the intervals of suffering under the hands of the dentist, he worked at preparing a new edition of the Elementary Physiology with Sir M. Foster, alternating with fresh studies in critical theology.

The following letters reflect his occupations at this time, together with his desire, strongly combated by his friend, of resigning the Presidency of the Royal Society immediately.

[1] Apparently announcing that he was about to accept a title. I have not been able to trace the paragraph.

HIGHCROFT HOUSE, MILFORD,
GODALMING, *Aug.* 9, 1884.

MY DEAR FOSTER—I had to go up to town on Friday, and yesterday I went and had all my remaining teeth out, and came down here again with a shrewd suspicion that I was really drunk and incapable, however respectable I might look outwardly. At present I can't eat at all, and *I can't smoke with any comfort.* For once I don't mind using italics.

Item.—I send the two cuts.

Heaven be praised! I had brought down no copy of Physiology with me, so could not attend to your proof. Got it yesterday, so I am now at your mercy.

But I have gone over the proofs now, and send you a deuce of a lot of suggestions.

Just think over additions to smell and taste to bring these into harmony.

The Saints salute you. I am principally occupied in studying the Gospels.—Ever yours, T. H. HUXLEY.

HIGHCROFT HOUSE, MILFORD,
GODALMING, *Aug.* 26, 1884.

DEARLY BELOVED—I have been going over the ear chapter this morning, and, as you will see, have suggested some additions. Those about the lamina spiralis are certainly necessary—*illus.* substitution of trihedral for triangular.[1] I want also very much to get into heads of students that in sensation it is all modes of motion up to and in sensorium, and that the generation of feeling is the specific reaction of a particle of the sensorium when stimulated, just as contraction, etc., is the specific reaction of a muscular fibre when stimulated by its nerve. The psychologists make the fools of themselves they do because they have never mastered this elementary fact. But I am not sure whether I have put it well, and I wish you would give your mind to it. As for me I have not had much mind to give lately—a fortnight's spoon-meat reduced me to inanity, and I am only just picking up again. However, I walked ten miles yesterday afternoon, so there is not much the matter.

I will see what I can do with the histology business.[2] I wanted to re-write it, but I am not sure yet whether I shall be able.

[1] On Sept. 8, he writes:—"I have been laughing over my 'trihedron.' It is a regular bull."

[2] "Most of our examinees" (he writes on Sept. 5) "have not a notion of what histology means at present. I think it will be good for other folks to get it into their heads that it is not all sections and carmine."

Between ourselves, I have pretty well made up my mind to clear out of everything next year, R.S. included. I loathe the thought of wasting any more of my life in endless distractions—and so long as I live in London there is no escape for me. I have half a mind to live abroad for six months in the year.—Ever yours, T. H. H.

I enclose letter from Deutsch lunatic to go before Council and be answered by Foreign Secretary.

HIGHCROFT HOUSE, MILFORD,
GODALMING, *Aug.* 29, 1884.

DEARLY BELOVED—I enclose the proofs, having mustered up volition enough to go over them at once. I think the alterations will be great improvements. I see you interpret yourself about the movements of the larynx.

As to the histology, I shall have a shot at it, but if I do not send you MS. in a week's time, go ahead. I am perplexed about the illustrations, but I see nothing for it but to have new ones in all the cases which you have marked. Have you anybody in Cambridge who can draw the things from preparations?

You are like Trochu with your "plan," and I am anxious to learn it. But have you reflected, 1st, that I am getting deafer and deafer, and that I cannot hear what is said at the council table and in the Society's rooms half the time people are speaking? and 2nd, that so long as I am President, so long must I be at the beck and call of everything that turns up in relation to the interests of science. So long as I am in the chair, I cannot be a *fainéant* or refuse to do anything and everything incidental to the position.

My notion is to get away for six months, so as to break with the "world, the flesh, and the devil" of London, for all which I have conceived a perfect loathing. Six months is long enough for anybody to be forgotten twice over by everybody but personal friends.

I am contemplating a winter in Italy, but I shall keep on my house for Harry's sake and as a *pied à terre* in London, and in the summer come and look at you at Burlington House, as the old soap-boiler used to visit the factory. I shall feel like the man out of whom the legion of devils departed when he looked at the gambades of the two thousand pigs going at express speed for the waters of Tiberias.

By the way, did you ever read that preposterous and immoral story carefully? It is one of the best attested of the miracles. . . .

When I have retired from the chair (which I must not scandalise) I shall write a lay sermon on the text. It will be impressive.

My wife sends her love, and says she has her eye on you. She is all for retirement.—Ever yours,

I am very sorry to hear of poor Mangles' death, but I suppose there was no other chance. T. H. H.

In September he hails with delight some intermission of the constant depression under which he has been labouring, and writes :—

So long as I sit still and write or read I am all right, otherwise not good for much, which is odd, considering that I eat, drink, and sleep like a top. I suppose that everybody starts with a certain capital of life-stuff, and that expensive habits have reduced mine.

And again :—

I have been very shaky for the last few weeks, but I am picking up again, and hope to come up smiling for the winter's punishment.

There was nothing to drink last night, so I had some tea! with my dinner—smoked a pipe or two—slept better than usual, and woke without blue devils for the first time for a week!!! Query, is that the effect of tea or baccy? I shall try them again. We are fearfully and wonderfully made, especially in the stomach—which is altogether past finding out.

Still, his humour would flash out in the midst of his troubles; he writes in answer to a string of semi-official enquiries from Sir J. Donnelly :—

HIGHCROFT HOUSE, MILFORD,
GODALMING.

SIR—In reply to your letter of the 9th Aug. (666), I have the honour to state—

1. That I am here.
2. That I have (*a*) had all my teeth out; (*b*) partially sprained my right thumb; (*c*) am very hot; (*d*) can't smoke with comfort; whence I may leave even official intelligence to construct an answer to your second inquiry.
3. Your third question is already answered under *2a*. Not writing might be accounted for by *2b*, but unfortunately the sprain is not bad enough—and "laziness, sheer laziness" is the proper answer.

I am prepared to take a solemn affidavit that I told you and Macgregor where I was coming many times, and moreover that I distinctly formed the intention of leaving my address in writing—according to those official instructions which I always fulfil.

If the intention was not carried out, its blood be upon its own head—I wash my hands of it, as Pilate did.

4. As to the question whether I *want* my letters I can sincerely declare that I don't—would in fact much rather not see them. But I suppose for all that they had better be sent.

5. I hope Macgregor's question is not a hard one—spoon-meat does not carry you beyond words of one syllable.

On Friday I signalised my last dinner for the next three weeks by going to meet the G.O.M. I sat next him, and he was as lively as a bird.

Very sorry to hear about your house. You will have to set up a van with a brass knocker and anchor on our common.—Ever yours, T. H. HUXLEY.

By the beginning of September he had made up his mind that he ought before long to retire from active life. The first person to be told of his resolution was the head of the Science and Art Department, with whom he had worked so long at South Kensington.

HIGHCROFT HOUSE, MILFORD, GODALMING,
Sept. 3, 1884.

MY DEAR DONNELLY—I was very glad to have news of you yesterday. I gather you are thriving, notwithstanding the appalling title of your place of refuge. I should have preferred "blow the cold" to "Cold blow"—but there is no accounting for tastes.

I have been going and going to write to you for a week past to tell you of a notion that has been maturing in my mind for some time, and that I ought to let you know of before anybody else. I find myself distinctly aged—tired out body and soul, and for the first time in my life fairly afraid of the work that lies before me in the next nine months. Physically, I have nothing much to complain of, except weariness—and for purely mental work, I think I am good for something yet. I am morally and mentally sick of society and societies—committees, councils—bother about details and general worry and waste of time.

I feel as if more than another year of it would be the death of me. Next May I shall be sixty, and have been thirty-one mortal years in my present office in the School. Surely I may sing my *nunc dimittis* with a good conscience. I am strongly inclined to announce to the Royal Society in November that the chair will be vacant that day twelvemonth—to resign my Government posts at midsummer, and go away and spend the winter in Italy—so that I may be out of reach of all the turmoil of London.

The only thing I don't like is the notion of leaving you without such support as I can give in the School. No one knows better than I do how completely it is your work and how gallantly you have borne the trouble and responsibility connected with it. But what am I to do? I must give up all or nothing—and I shall certainly come to grief if I do not have a long rest.

Pray tell me what you think about it all.

My wife has written to Mrs. Donnelly and told her the news. —Ever yours very faithfully, T. H. HUXLEY.

Read Hobbes if you want to get hard sense in good English.

HIGHCROFT HOUSE, MILFORD, GODALMING,
Sept. 10, 1884.

MY DEAR DONNELLY—Many thanks for your kind letter. I feel rather like a deserter, and am glad of any crumbs of comfort.

Cartwright has done wonders for me, and I can already eat most things (I draw the line at tough crusts). I have not even my old enemy, dyspepsia—but eat, drink, and sleep like a top.

And withal I am as tired as if I were hard at work, and shirk walking.

So far as I can make out there is not the slightest sign of organic disease anywhere, but I will get Clark to overhaul me when I go back to town. Sometimes I am inclined to suspect that it is all sham and laziness—but then why the deuce should I want to sham and be lazy.

Somebody started a charming theory years ago—that as you get older and lose volition, primitive evil tendencies, heretofore mastered, come out and show themselves. A nice prospect for venerable old gentlemen!

Perhaps my crust of industry is denuded, and the primitive rock of sloth is cropping out.

But enough of this egotistical invalidism.

How wonderfully Gordon is holding his own. I should like to see him lick the Mahdi into fits before Wolseley gets up. You despise the Jews, but Gordon is more like one of the Maccabees or Bar-Kochba than any sort of modern man.

My wife sends love to both of you, and says you are (in feminine language) "a dear thing in friends."—Ever yours very faithfully,

T. H. HUXLEY.

HOME OFFICE, *Sept.* 18, 1884.

MY DEAR DONNELLY—We have struck our camp at Milford, and I am going down to Devonshire and Cornwall to-morrow—partly on Fishery business, partly to see if I can shake myself straighter by change of air. I am possessed by seven devils—not only blue, but of the deepest indigo—and I shall try to transplant them into a herd of Cornish swine.

The only thing that comforts me is Gordon's telegrams. Did

ever a poor devil of a Government have such a subordinate before? He is the most refreshing personality of this generation.

I shall be back by 30th September—and I hope in better condition for harness than now.—Ever yours very faithfully,

T. H. HUXLEY.

Replying to General Donnelly's arguments against his resigning all his official posts, he writes :—

DARTMOUTH, *Sept.* 21, 1884.

MY DEAR DONNELLY—Your letters, having made a journey to Penzance (where I told my wife I should go last Friday, but did not, and brought up here instead) turned up this morning.

I am glad to have seen Lord Carlingford's letter, and I am very much obliged to him for his kind expressions. Assuredly I will not decide hastily.

Now for your letter—I am all for letters in these matters. Not that we are either of us "impatient and irritable listeners"—oh dear, no! "I have my faults," as the miser said, "but *avarice* is not one of them"—and we have our faults too, but notoriously they lie in the direction of long-suffering and apathy.

Nevertheless there is a good deal to be said for writing. *Mine* is itself a discipline in patience for my correspondent.

Imprimis. I scorn all your chaff about Society. My great object for years has been to keep out of it, not to go into it. Just you wait till the Misses Donnelly grow up—I trust there may be five or ten of them—and see what will happen to you. But apart from this, so long as I live in London, so long will it be practically impossible for me to keep out of dining and giving of dinners—and you know that just as well as I do.

2nd. I mean to give up the Presidency, but don't see my way to doing so next St. Andrew's Day. I wish I could—but I must deal fairly by the Society.

3rd. The suggestion of the holiday at Christmas is the most sensible thing you have said. I could get six weeks under the new arrangement (*Botany*, January and half February) without interfering with my lectures at all. But then there is the blessed Home Office to consider. There might be civil war between the net men and the rod men in six weeks, all over the country, without my mild influence.

4th. I must give up my Inspectorship. The mere thought of having to occupy myself with the squabbles of these idiots of country squireens and poachers makes me sick—and is, I believe, the chief cause of the morbid state of my mucous membranes.

All this week shall I be occupied in hearing one Jackass contradict another Jackass about questions which are of no importance.

I would almost as soon be in the House of Commons.

Now see how reasonable I am. I agree with you (*a*) that I must get out of the hurly-burly of society; (*b*) that I must get out of the Presidency; (*c*) that I must get out of the Inspectorship, or rather I agree with myself on that matter, you having expressed no opinion.

That being so, it seems to me that I must, willy-nilly, give up S.K. For—and here is the point you had in your mind when you lamented your possible impatience about something I might say—I swear by all the gods that are not mine, nothing shall induce me to apply to the Treasury for anything but the pound of flesh to which I am entitled.

Nothing ever disgusted me more than being the subject of a battle with the Treasury over the H.O. appointment—which I should have thrown up if I could have done so with decency to Harcourt.

It's just as well for me I couldn't, but it left a nasty taste.

I don't want to leave the School, and should be very glad to remain as Dean, for many reasons. But what I don't see is how I am to do that and make my escape from the thousand and one entanglements—which seem to me to come upon me quite irrespectively of any office I hold—or how I am to go on living in London as a (financially) decayed philosopher.

I really see nothing for it but to take my pension and go and spend the winter of 1885-86 in Italy. I hear one can be a regular swell there on £1000 a year.

Six months' absence is oblivion, and I shall take to a new line of work, and one which will greatly meet your approval.

As to X—— I am not a-going to—not being given to hopeless enterprises. That rough customer at Dublin is the only man who occurs to me. I can't think of his name, but that is part of my general unfitness.

. . . . I suppose I shall chaff somebody on my death-bed. But I am out of heart to think of the end of the lunches in the sacred corner.—Ever yours, T. H. HUXLEY.

On the 21st he writes home about the steps he had begun to take with respect to giving up part of his official work.

I have had a long letter from Donnelly. He had told Lord Carlingford of my plans, and incloses a letter from Lord Carlingford to him, trusting I will not hastily decide, and with some pretty phrases about "support and honour" I give to the School. Donnelly is very anxious I should hold on to the School, if only as Dean, and wants me in any case to take two months' holiday at Christmas. Of

course he looks on the R.S. as the root of all evil. Foster *per contra* looks on the School as the deuce, but would have me stick by the Royal Society like grim death.

The only moral obligation that weighs with me is that which I feel under, to deal fairly by Donnelly and the School. You must not argue against this, as rightly or wrongly I am certain that if I deserted the School hastily, or if I did not do all that I can to requite Donnelly for the plucky way in which he has stood by it and me for the last dozen years, I should never shake off the feeling that I had behaved badly. And as I am much given to brooding over my misdeeds, I don't want you to increase the number of my hell-hounds. You must help me in this . . . and if I am Quixotic, play Sancho for the nonce.

CHAPTER VI

1884–85

TOWARDS the end of September he went to the West country to try to improve his health before the session began again in London. Thus he writes, on Sept. 26, to Mr. W. F. Collier, who had invited him to Horrabridge, and on the 27th to Sir M. Foster:—

FOWEY, *Sept.* 26, 1884.

Many thanks for the kind offer in your letter, which has followed me here. But I have not been on the track you might naturally have supposed I had followed. I have been trying to combine hygiene with business, and betook myself, in the first place, to Dartmouth, afterwards to Totnes, and then came on here. From this base of operations I could easily reach all my places of meeting. To-morrow I have to go to Bodmin, but I shall return here, and if the weather is fine (raining cats and dogs at present), I may remain a day or two to take in stock of fresh air before commencing the London campaign.

I am very glad to hear that your health has improved so much. You must feel quite proud to be such an interesting "case." If I set a good example myself I would venture to warn you against spending five shillings' worth of strength on the ground of improvement to the extent of half-a-crown.

I am not quite clear as to the extent to which my children have colonised Woodtown at present. But it seems to me that there must be three or four Huxleys (free or in combination, as the chemists say) about the premises. Please give them the paternal benediction; and with very kind remembrances to Mrs. Collier, etc.

FOWEY HOTEL, FOWEY, CORNWALL,
Sept. 27, 1884.

MY DEAR FOSTER—I return your proof, with a few trifling suggestions here and there. . . .

I fancy we may regard the award as practically settled, and a very good award it will be.

The address is beginning to loom in the distance. I have half a mind to devote some part of it to a sketch of the recent novelties in histology touching the nucleus question and molecular physiology.

My wife sent me your letter. By all means let us have a confabulation as soon as I get back and settle what is to be done with the "aged P."

I am not sure that I shall be at home before the end of the week. My lectures do not begin till next week, and the faithful Howes can start the practical work without me, so that if I find myself picking up any good in these parts, I shall probably linger here or hereabouts. But a good deal will depend on the weather—inside as well as outside. I am convinced that the prophet Jeremiah (whose works I have been studying) must have been a flatulent dyspeptic—there is so much agreement between his views and mine.—Ever yours, T. H. HUXLEY.

But the net result of this holiday is summed up in a note, of October 5, to Sir M. Foster:—

I got better while I was in Cornwall and Wales, and, at present, I don't think there is anything the matter with me except a profound disinclination to work. I never before knew the proper sense of the term "vis inertiæ."

And writing in the same strain to Sir J. Evans, he adds:—

But I have a notion that if I do not take a long spell of absolute rest before long I shall come to grief. However, getting into harness again may prove a tonic—it often does, *e.g.* in the case of cab-horses.

Three days later he found himself ordered to leave England immediately, under pain of a hopeless breakdown.

4 MARLBOROUGH PLACE,
Oct. 8, 1884.

MY DEAR FOSTER—We shall be very glad to see you on Friday. I came to the conclusion that I had better put myself in Clark's hands again, and he has been here this evening overhauling me for an hour.

He says there is nothing wrong except a slight affection of the liver and general nervous depression, but that if I go on the latter will get steadily worse and become troublesome. He insists on my

going away to the South and doing nothing but amuse myself for three or four months.

This is the devil to pay, but I cannot honestly say that I think he is wrong. Moreover, I promised the wife to abide by his decision.

We will talk over what is to be done.—Ever yours,

T. H. HUXLEY.

ATHENÆUM CLUB,
Oct. 13, 1884.

MY DEAR MORLEY—I heartily wish I could be with you on the 25th, but it is *aliter visum* to somebody, whether Dis or Diabolis, I can't say.

The fact is, the day after I saw you I had to put myself in Clark's hands, and he ordered me to knock off work and go and amuse myself for three or four months, under penalties of an unpleasant kind.

So I am off to Venice next Wednesday. It is the only tolerably warm place accessible to any one whose wife will not let him go within reach of cholera just at present.

If I am a good boy I am to come back all sound, as there is nothing organic the matter; but I have had enough of the world, the flesh, and the devil, and shall extricate myself from that Trinity as soon as may be. Perhaps I may get within measurable distance of Berkeley (*English Men of Letters*, ed. J.M.) before I die!—Ever yours very faithfully, T. H. HUXLEY.

ATHENÆUM CLUB,
October 18, 1884.

MY DEAR FOSTER—Best thanks for your letter and route. I am giving you a frightful quantity of trouble; but, as the old woman (Irish) said to my wife, when she gave her a pair of my old trousers for her husband, "I hope it may be made up to ye in a better world."

She is clear, and I am clear, that there is no reason on my part for not holding on if the Society really wishes I should. But, of course, I must make it easy for the Council to get rid of a *fainéant* President, if they prefer that course.

I wrote to Evans an unofficial letter two days ago, and have had a very kind, straightforward letter from him. He is quite against my resignation. I shall see him this afternoon here. I had to go to my office (Fishery).

Clark's course of physic is lightening my abdominal troubles, but I am preposterously weak with a kind of shabby broken-down indifference to everything.—Ever yours, T. H. H.

The "Indian summer"[1] to which he looked forward was not to be reached without passing through a season of more than equinoctial storms and tempests. His career had reached its highest point only to be threatened with a speedy close. He himself did not expect more than two or three years' longer lease of life, and went by easy stages to Venice, where he spent eight days. "No place," he writes, "could be better fitted for a poor devil as sick in body and mind as I was when I got there."

Venice itself (he writes to Dr. Foster) just suited me. I chartered a capital gondolier, and spent most of my time exploring the Lagoons. Especially I paid a daily visit to the Lido, and filled my lungs with the sea air, and rejoiced in the absence of strikes. For Venice is like her population (at least the male part of it), handsome but odorous. Did you notice how handsome the young men are and how little beauty there is among the women?

I stayed eight days in Venice and then returned by easy stages first to Padua, where I wanted to see Giotto's work, then to Verona, and then here (Lugano). Verona delighted me more than anything I have seen, and we will spend two other days there as we go back.

As for myself, I really have no positive complaint now. I eat well and I sleep well, and I should begin to think I was malingering, if it were not for a sort of weariness and deadness that hangs about me, accompanied by a curious nervous irritability.

I expect that this is the upshot of the terrible anxiety I have had about my daughter M——.

I would give a great deal to be able to escape facing the wedding, for my nervous system is in the condition of that of a frog under opium.

But my R. must not go off without the paternal benediction.

For the first three weeks he was alone, his wife staying to make preparations for the third daughter's wedding on November 6th, for which occasion he was to return, afterwards taking her abroad with him. Unfortunately, just as he started, news was brought him at the railway station that his second daughter, whose brilliant gifts and happy marriage seemed to promise everything for her future, had been stricken by the beginnings of an insidious and, as he too truly feared, hopeless disease. Nothing could have more retarded his own recovery. It was a bitter grief, referred to

[1] See page 68.

only in his most intimate letters, and, indeed, for a time kept secret even from the other members of the family. Nothing was to throw a shade over the brightness of the approaching wedding.

But on his way home, he writes of that journey:—

I had to bear my incubus, not knowing what might come next, until I reached Luzern, when I telegraphed for intelligence, and had my mind set at ease as to the measures which were being adopted.

I am a tough subject, and have learned to bear a good deal without crying out; but those four-and-twenty hours between London and Luzern have taught me that I have yet a good deal to learn in the way of "grinning and bearing."

And although he writes, "I would give a good deal not to face a lot of people next week," . . . "I have the feelings of a wounded wild beast and hate the sight of all but my best friends," he hid away his feelings, and made this the occasion for a very witty speech, of which, alas! I remember nothing but a delightfully mixed polyglot exordium in French, German, and Italian, the result, he declared, of his recent excursion to foreign parts, which had obliterated the recollection of his native speech.

During his second absence he appointed his youngest daughter secretary to look after necessary correspondence, about which he forwarded instructions from time to time.

The chief matters of interest in the letters of this period are accounts of health and travel, sometimes serious, more often jesting, for the letters were generally written in the bright intervals between his dark days: business of the Royal Society, and the publication of the new edition of the *Lessons in Elementary Physiology*, upon which he and Dr. Foster had been at work during the autumn. But the four months abroad were not productive of very great good; the weather was unpropitious for an invalid—"as usual, a quite unusual season"—while his mind was oppressed by the reports of his daughter's illness. Under these circumstances recovery was slow and travel comfortless; all the Englishman's love of home breaks out in his letter of April 8, when he set foot again on English soil.

HOTEL DE LONDRES, VERONA,
Nov. 18, 1884.

DEAREST BABS—1. Why, indeed, do they ask for more? Wait till they send a letter of explanation, and then say that I am out of the country and not expected back for several years.

2. I wholly decline to send in any name to Athenæum. But don't mention it.

3. Society of Arts be bothered, also——.

4. Write to Science and Art Club to engage three of the prettiest girls as partners for the evening. They will look very nice as wallflowers.

5. Penny dinners? declined with thanks.

6. Ask the meeting of Herts N.H. Society to come here after next Thursday, when we shall be in Bologna.

Business first, my sweet girl secretary with the curly front; and now for private affairs, though as your mother is covering reams with them, I can only mention a few of the more important which she will forget.

The first is that she has a habit of hiding my shirts so that I am unable to find them when we go away, and the chambermaid comes rushing after us with the garment shamefully displayed.

The second is that she will cover all the room with her things, and I am obliged to establish a military frontier on the table.

The third is that she insists on my buying an Italian cloak. So you will see your venerable pater equipped in this wise.[1] Except in these two particulars, she behaves fairly well to me.

In point of climate, so far, Italy has turned out a fraud. We dare not face Venice, and Mr. Fenili will weep over my defection; but that is better than that we should cough over his satisfaction.

I am quite pleased to hear of the theological turn of the family. It must be a drop of blood from one of your eight great-grandfathers, for none of your ancestors that I have known would have developed in this way.

. . . Best love to Nettie and Harry. Tell the former that cabbages do *not* cost 5s. apiece, and the latter that 11 P.M. is the *clôture*.—Ever your affectionate PATER.

HOTEL BRITANNIQUE, NAPLES,
Nov. 30, 1884.

MY DEAR FOSTER—Which being St. Andrew's Day, I think the expatriated P. ought to give you some account of himself.

[1] Sketch of a cloaked figure like a brigand of melodrama.

We had a prosperous journey to Locarno, but there plumped into bitter cold weather, and got chilled to the bone as the only guests in the big hotel, though they did their best to make us comfortable. I made a shot at bronchitis, but happily failed, and got all right again.

Pallanza was as bad. At Milan temperature at noon 39° F., freezing at night. Verona much the same. Under these circumstances, we concluded to give up Venice and made for Bologna. There found it rather colder. Next Ravenna, where it snowed. However, we made ourselves comfortable in the queer hotel, and rejoiced in the mosaics of that sepulchral marsh.

At Bologna I had assurances that the Sicilian quarantine was going to be taken off at once, and as the reports of the railway travelling and hotels in Calabria were not encouraging, I determined to make for Naples, or rather, by way of extra caution, for Castellamare. All the way to Ancona the Apennines were covered with snow, and much of the plain also. Twenty miles north of Ancona, however, the weather changed to warm summer, and we rejoiced accordingly. At Foggia I found that the one decent hotel that used to exist was non-extant, so we went on to Naples.

Arriving at 10.30 very tired, got humbugged by a lying Neapolitan, who palmed himself off as the commissaire of the Hotel Bristol, and took us into an omnibus belonging to another hotel, that of the British being, as he said, "broke." After a drive of three miles or so got to the Bristol and found it shut up! After a series of adventures and a good deal of strong language on my part, knocked up the people here, who took us in, though the hotel was in reality shut up like most of those in Naples.[1]

As usual the weather is "unusual"—hot in the sun, cold round the corner and at night. Moreover, I found by yesterday's paper that the beastly Sicilians won't give up their ten days' quarantine. So all chance of getting to Catania or Palermo is gone. I am not sure whether we shall stay here for some time or go to Rome, but at any rate we shall be here a week.

Dohrn is away getting subsidies in Germany for his new ship. We inspected the Aquarium this morning. Eisig and Mayer are in charge. Madame is a good deal altered in the course of the twelve years that have elapsed since I saw her, but says she is much better than she was.

As for myself, I got very much better when in North Italy in spite of the piercing cold. But the fatigue of the journey from Ancona here, and the worry at the end of it, did me no good, and I have been seedy for a day or two. However, I am picking up.

I see one has to be very careful here. We had a lovely drive

[1] Owing to the cholera and consequent dearth of travellers.

yesterday out Pausilippo, but the wife got chilled and was shaky this morning. However, we got very good news of our daughter this evening, and that has set us both up.

My blessing for to-morrow will reach you after date. Let us hear how everything went off.

Your return in May project is really impracticable on account of the Fishery Report. I cannot be so long absent from the Home Office whatever I might manage with S.K.

With our love to Mrs. Foster and you—Ever yours very faithfully, T. H. HUXLEY.

This letter, as he says a week later, was written when he "was rather down in the mouth from the wretched cold weather, and the wife being laid up with a bad cold," besides his own ailments.

I find I have to be very careful about night air, but nothing does me so much good as six or seven miles' walk between breakfast and lunch—at a good sharp pace. So I conclude that there cannot be much the matter, and yet I am always on the edge, so to speak, of that infernal hypochondria.

We have settled down here very comfortably, and I do not think we shall care to go any further south. Madame Dohrn and all the people at the stazione are very kind, and want to do all sorts of things for us. The other day we went in the launch to Capri, intending next day to go to Amalfi. But it threatened bad weather, so we returned in the evening. The journey knocked us both up, and we had to get out of another projected excursion to Ischia to-day. The fact is, I get infinitely tired with talking to people and can't stand any deviation from regular and extremely lazy habits. Fancy my being always in bed by ten o'clock and breakfasting at nine!

On the 10th, writing to Sir John Evans, who as Vice-President, was acting in his stead at the Royal Society, he says :—

In spite of snow on the ground we had three or four days at Ravenna—which is the most interesting deadly lively sepulchre of a place I was ever in in my life. The evolution of modern from ancient art is all there in a nutshell. . . .

I lead an altogether animal life, except that I have renewed my old love for Italian. At present I am rejoicing in the Autobiography of that delightful sinner, Benvenuto Cellini. I have some notion that there is such a thing as science somewhere. In fact I am fitting myself for Neapolitan nobility.

TO HIS YOUNGEST DAUGHTER

HOTEL BRITANNIQUE, NAPLES,
Dec. 22, 1884.

But we have had no letters from home for a week. . . . Moreover, if we don't hear to-day or to-morrow we shall begin to speculate on the probability of an earthquake having swallowed up 4 M. P. "with all the young barbarians at play—And I their sire trying to get a Roman holiday" (Byron). For we are going to Rome to-morrow, having had enough of Naples, the general effect of which city is such as would be produced by the sight of a beautiful woman who had not washed or dressed her hair for a month. Climate, on the whole, more variable than that of London.

We had a lovely drive three days ago to Cumae, a perfect summer's day; since then sunshine, heat, cold wind, calms all durcheinander, with thunder and lightning last night to complete the variety.

The thermometer and barometer are not fixed to the walls here, as they would be jerked off by the sudden changes. At first, it is odd to see them dancing about the hall. But you soon get used to it, and the porter sees that they don't break themselves.

With love to Nettie and Harry, and hopes that the pudding will be good—Ever your loving father, T. H. HUXLEY.

In January 1885 he went to Rome, whence he writes:—

HOTEL VICTORIA, VIA DEI DUE MACELLI,
ROME, *Jan.* 8, 1885.

MY DEAR FOSTER—We have been here a fortnight very well lodged—south aspect, fireplace, and all the rest of the essentials except sunshine. Of this last there is not much more than in England, and the grey skies day after day are worthy of our native land. Sometimes it rains cats and dogs all day by way of a change—as on Christmas Day—but it is not cold. "Quite exceptional weather," they tell us, but that seems to be the rule everywhere. We have done a respectable amount of gallery-slaving, and I have been amusing myself by picking up the topography of ancient Rome. I was going to say Pagan Rome, but the inappropriateness of the distinction strikes me, papal Rome being much more stupidly and childishly pagan than imperial. I never saw a sadder sight than the kissing a wretched bedizened doll of a Bambino that went on in the Ara Coeli on Twelfth day. Your puritan soul would have longed to arise and slay. . . .

As to myself, though it is a very unsatisfactory subject and one

I am very tired of bothering my friends about, I am like the farmer at the rent-dinner, and don't find myself much "forrarder." That is to say, I am well for a few days and then all adrift, and have to put myself right by dosing with Clark's pills, which are really invaluable. They will make me believe in those pills I saw advertised in my youth, and which among other things were warranted to cure "the indecision of juries." I really can't make out my own condition. I walked seven or eight miles this morning over Monte Mario and out on the Campagna without any particular fatigue, and yesterday I was as miserable as an owl in sunshine. Something perhaps must be put down to the relapse which our poor girl had a week ago, and which became known to us in a terrible way. She had apparently quite recovered, and arrangements were made for their going abroad, and now everything is upset. I warned her husband that this was very likely, but did not sufficiently take the warning to myself.

You are taking a world of trouble for me, and Donnelly writes I am to do as I like so far as they are concerned. I have heard nothing from the Home Office, and I suppose it would be proper for me to write if I want any more leave. I really hardly know what to do. I can't say I feel very fit for the hurly-burly of London just now, but I am not sure that the wholesomest thing for me would not be at all costs to get back to some engrossing work. If my poor girl were well, I could perhaps make something of the *dolce far niente*, but at present one's mind runs to her when it is not busy in something else.

I expect we shall be here a week or ten days more—at any rate, this address is safe—afterwards to Florence.

What am I to do in the Riviera? Here and at Florence there is always some distraction. You see the problem is complex.

My wife, who is very lively, thanks you for your letter (which I have answered) and joins with me in love to Mrs. Foster and yourself.—Ever yours, T. H. H.

Writing on the same day to Sir J. Evans, he proposed a considerable alteration in the duties of the Assistant Secretary of the Royal Society.

You know that I served a seven years' apprenticeship as Secretary, and that experience gave me very solid grounds for the conviction that, with the present arrangements, a great deal of the time of the Secretaries is wasted over the almost mechanical drudgery of proof-reading.

He suggests new arrangements, and proceeds:—

At the same time it would be very important to adopt some

arrangement by which the *Transactions* papers can be printed independently of one another.

Why should not the papers be paged independently and be numbered for each year. Thus—"Huxley. Idleness and Incapacity in Italy. *Phil. Trans.* 1885. VI."

People grumble at the delay in publication, and are quite right in doing so, though it is impossible under the present system to be more expeditious, and it is not every senior secretary who would slave at the work as Stokes does. . . .

But it is carrying coals to Newcastle to talk of such business arrangements as these to you.

The only thing I am strong about, is the folly of going on cutting blocks with our Secretarial razors any longer.

I am afraid I cannot give a very good account of myself.

The truth of the answer to Mallock's question "Is life worth living?"—that depends on the liver—is being strongly enforced upon me in the hepatic sense of liver, and I must confess myself fit for very little. A week hence we shall migrate to Florence and try the effect of the more bracing air. The Pincio is the only part of Rome that is fit to live in, and unfortunately the Government does not offer to build me a house there.

However, I have got a great deal of enjoyment out of ancient Rome—papal Rome is too brutally pagan (and in the worst possible taste too) for me.

TO HIS DAUGHTER, MRS. ROLLER

Jan. 11, 1885.

We have now had nearly three weeks in Rome. I am sick of churches, galleries, and museums, and meanly make M—— go and see them and tell me about them. As we are one flesh, it is just the same as if I had seen them.

Since the time of Constantine there has been nothing but tawdry rubbish in the shape of architecture[1]—the hopeless bad taste of the Papists is a source of continual gratification to me as a good Protestant (and something more). As for the skies, they are as changeable as those of England—the only advantage is the absence of frost and snow—(raining cats and dogs this Sunday morning).

But down to the time of Constantine, Rome is endlessly interesting, and if I were well I should like to spend some months in exploring it. As it is, I do very little, though I have contrived to pick up all I want to know about Pagan Rome and the Catacombs, which last are my especial weakness.

[1] For his appreciation of the great dome of the Pantheon, see p. 126.

My master and physician is bothered a good deal with eczema —otherwise very lively. All the chief collections in Rome are provided with a pair of her spectacles, which she leaves behind. Several new opticians' shops are set up on the strength of the purchases in this line she is necessitated to make.

I want to be back at work, but I am horribly afraid I should be no good yet. We are thinking of going to Florence at the end of this week to see what the drier and colder air there will do.

With our dear love to you all—we are wae for a sight of you.—Ever your loving father, T. H. HUXLEY.

HOTEL VICTORIA, VIA DEI DUE MACELLI,
Jan. 16, 1885.

MY DEAR FOSTER—It seems to me that I am giving my friends a world of trouble. . . .

I have had a bad week of it, and the night before last was under the impression that I was about to succumb shortly to a complication of maladies, and morever, that a wooden box that my wife had just had made would cost thousands of pounds in the way of payment for extra luggage before we reached home. I do not know which hypochondriacal possession was the most depressing. I can laugh at it now, but I really was extraordinarily weak and ill.

We had made up our minds to bolt from Rome to Florence at once, when I suddenly got better, and to-day am all right. So as we hear of snow at Florence we shall stop where we are. It has been raining cats and dogs here, and the Tiber rose 40 feet and inundated the low grounds. But "cantabit elevatus"; it can't touch us, and at any rate the streets are washed clean.

The climate is mild here. We have a capital room and all the sunshine that is to be had, plus a good fire when needful, and at worst one can always get a breezy walk on the Pincio hard by.

However, about the leave. Am I to do anything or nothing? I am dying to get back to steady occupation and English food, and the sort of regimen one can maintain in one's own house. On the other hand, I stand in fear of the bitter cold of February and early March, and still more of the thousand and one worries of London outside one's work. So I suppose it will be better if I keep away till Easter, or at any rate to the end of March. But I must hear something definite from the H.O. I have written to Donnelly to the same effect. My poor Marian's relapse did not do us any good, for all that I expected it. However, the last accounts are very favourable.

I wrote to Evans the other day about a re-arrangement of the

duties of the Secretary and Assistant Secretary. I thought it was better to write to him than to you on that subject, and I begged him to discuss the matter with the officers. It is quite absurd that Stokes and you should waste your time in press drudgery.

We are very prudent here, and the climate suits us both, especially my wife, who is so vigorous that I depute her to go and see the Palazzi, and tell me all about them when she comes back. Old Rome is endlessly interesting to me, and I can always potter about and find occupation. I think I shall turn antiquary—it's just the occupation for a decayed naturalist, though you need not tell the Treasurer I say so.

With our love to Mrs. Foster and yourself—Ever yours,

T. H. H.

HOTEL VICTORIA, ROME, VIA DEI DUE MACELLI,
Jan. 18, 1885.

MY DEAR DONNELLY—Official sentence of exile for two months more (up to May 12) arrived yesterday. So if my lords will be so kind as to concur I shall be able to disport myself with a clear conscience. I hope their lordships won't think that I am taking things too easy in not making a regular application, and I will do so if you think it better. But if it had rested with me I think I should have got back in February and taken my chance. That energetic woman that owns me, and Michael Foster, however, have taken the game out of my hands, and I have nothing to do but to submit.

On the whole I feel it is wise. I shall have more chance if I escape not only the cold but the bother of London for a couple of months more.

I was very bad a week ago, but I have taken to dosing myself with quinine, and either that or something else has given me a spurt for the last two days, so that I have been more myself than any time since I left, and begin to think that there is life in the old dog yet. If one could only have some fine weather! To-day there is the first real sunshine we have been favoured with for a week.

We are just back from a great function at St. Peter's. It is the festa of St. Peter's chair, and the ex-dragoon Cardinal Howard has been fugleman in the devout adorations addressed to that venerable article of furniture, which, as you ought to know, but probably don't, is inclosed in a bronze double and perched up in a shrine of the worst possible taste in the Tribuna of St. Peter's. The display of man-millinery and lace was enough to fill the lightest-minded woman with envy, and a general concert—some of the music very good—prevented us from feeling dull, while the ci-devant guardsman—

big, burly, and bullet-headed—made God and then eat him.[1] I must have a strong strain of Puritan blood in me somewhere, for I am possessed with a desire to arise and slay the whole brood of idolators whenever I assist at one of these ceremonies. You will observe that I am decidedly better, and have a capacity for a good hatred still.

The last news about Gordon is delightful. The chances are he will rescue Wolseley yet.

With our love—Ever yours, T. H. HUXLEY.

TO HIS ELDEST SON

ROME, *Jan.* 20, 1885.

I need hardly tell you that I find Rome wonderfully interesting, and the attraction increases the longer one stays. I am obliged to take care of myself and do but little in the way of sight-seeing, but by directing one's attention to particular objects one can learn a great deal without much trouble. I begin to understand Old Rome pretty well, and I am quite learned in the Catacombs, which suit me, as a kind of Christian fossils out of which one can reconstruct the body of the primitive Church. She was a simple maiden enough and vastly more attractive than the bedizened old harridan of the modern Papacy, so smothered under the old clothes of Paganism which she has been appropriating for the last fifteen centuries that Jesus of Nazareth would not know her if he met her.

I have been to several great papistical functions—among others to the festa of the Cathedra Petri in St. Peter's last Sunday, and I confess I am unable to understand how grown men can lend themselves to such elaborate tomfooleries—nothing but mere fetish worship—in forms of execrably bad taste, devised, one would think, by a college of ecclesiastical man-milliners for the delectation of school-girls. It is curious to notice that intellectual and æsthetic degradation go hand in hand. You have only to go from the Pantheon to St. Peter's to understand the great abyss which lies between the Roman of paganism and the Roman of the papacy. I have seen nothing grander than Agrippa's work—the popes have stripped it to adorn their own petrified lies, but in its nakedness it has a dignity with which there is nothing to compare in the ill-proportioned, worse decorated tawdry stone mountain on the Vatican.

The best thing, from an æsthetic point of view, that could be done with Rome would be to destroy everything except St. Paolo fuor le Mure, of later date than the fourth century.

[1] A reminiscence of Browning in "The Bishop Orders his Tomb":—

> And then how I shall lie through centuries,
> And hear the blessed mutter of the mass,
> And see God made and eaten all day long.

But you will have had enough of my scrawl, and your mother wants to add something. She is in great force, and is gone prospecting to some Palazzo or other to tell me if it is worth seeing.—Ever your loving father, T. H. HUXLEY.

HOTEL VICTORIA, ROME, VIA DEI DUE MACELLI,
Jan. 25, 1885.

MY DEAR DONNELLY—Best thanks for the telegram which arrived the day before yesterday and set my mind at ease.

I have been screwing up the old machine which I inhabit, first with quinine and now with a form of strychnia (which Clark told me to take) for the last week, and I have improved a good deal whether *post hoc* or *propter hoc* in the present uncertainty of medical science I decline to give any opinion.

The weather is very cold for Rome—ice an eighth of an inch thick in the Ludovisi Garden the other morning, and every night it freezes, but mostly fine sunshine in the day. (This is a remarkable sentence in point of grammar, but never mind.) The day before yesterday we came out on the Campagna, and it then was as fresh and bracing a breeze as you could get in Northumberland.

We are very comfortable and quiet here, and I hold on—till it gets warmer. I am told that Florence is detestable at present. As for London, our accounts make us shiver and cough.

News about the dynamiting gentry just arrived. A little more mischief and there will be an Irish massacre in some of our great towns. If an Irish Parnellite member were to be shot for every explosion I believe the thing would soon stop. It would be quite just, as they are practically accessories.

I think —— would do it if he were Prime Minister. Nothing like a thorough Radical for arbitrary acts of power!

I must be getting better, as my disgust at science has ceased, and I have begun to potter about Roman geology and prehistoric work. You may be glad to learn that there is no evidence that the prehistoric Romans had Roman noses. But as I cannot find any particular prevalence of [them] among the modern—or ancient except for Cæsar—Romani, the fact is not so interesting as it might appear, and I would not advise you to tell —— of it.

Behold a Goak—feeble, but promising of better things.

My wife unites with me with love to Mrs. Donnelly and yourself.—Ever yours, T. H. HUXLEY.

The following letter refers to the fourth edition of the *Lessons in Elementary Physiology*, in the preparation of which Dr. Foster had been helping during the summer:—

HOTEL VICTORIA, ROME, VIA DEI DUE MACELLI,
Feb. 1, 1885.

MY DEAR FOSTER—Anything more disgraceful than the way in which I have left your letter of more than a fortnight ago unanswered, I don't know. I thought the wife had written about the leave (and she thought I had, as she has told you) but I knew I had not answered the questions about the title, still less considered the awful incubus (× 10,000 dinners by hepatic deep objection) of the preface.

There is such a thing as justice in this world—not much of it, but still some—and it is partly on that ground and partly because I want you, in view of future eventualities, to have a copyright in the book, that I proposed we should join our names.

Of course, if you would really rather not, for any good reason you may have, I have nothing further to say. But I don't think that the sentimental reason is a good one, and unless you have a better, I wish you would let the original proposal stand.

However, having stated the case afresh I leave it for you to say yes or no, and shall abide by your decision without further discussion.

As to the Preface. If I am to write it, please send me the old Preface. I think the book was published in 1864, or was it 1866?[1] and it ought to be come of age or nearly so.

You might send me the histological chapter, not that I am going to alter anything, but I should like to see how it looks. I will knock the preface off at once, as soon as I hear from you.

The fact is, I have been much better in the course of the last few days. The weather has been very sunshiny but cool and bracing, and I have taken to quinine. Tried Clark's strychnine, but it did not answer so well.

I am in hopes that I have taken a turn for the better, and that there may yet be the making of something better than a growling hypochondriacal old invalid about me. But I am most sincerely glad that I am not obliged to be back 10 days hence—there is not much capital accumulated yet.

I find that the Italians have been doing an immense deal in prehistoric archæology of late years, and far more valuable work than I imagined. But it is very difficult to get at, and as Loescher's head man told me the other day when I asked for an Italian book published in Rome, "Well, you see it is so difficult to get Roman books in Rome."

I am ashamed to be here two months without paying my respects to the Lincei, and I am going to-day. The unaccountable creatures meet at 1 o'clock—lunch time!

[1] In 1866.

Best love from my wife and self to Mrs. Foster and yourself.—
Ever yours, T. H. HUXLEY.

ROME, *Feb.* 14, 1885.

MY DEAR FOSTER—*Voilà* the preface—a work of great labour! and which you may polish and alter as you like, *all but the last paragraph.* You see I have caved in. I like your asking to have your own way "for once." My wife takes the same line, does whatever she pleases, and then declares I leave her no initiative.

If I talk of public affairs, I shall simply fall a-blaspheming. I see the *Times* holds out about Gordon, and does not believe he is killed. Poor fellow! I wish I could believe that his own conviction (as he told me) is true, and that death only means a larger government for him to administer. Anyhow, it is better to wind up that way than to go growling out one's existence as a ventose hypochondriac, dependent upon the condition of a few square inches of mucous membrane for one's heaven or hell.

As to private affairs, I think I am getting solidly, but very slowly, better. In fact, I can't say there is much the matter with me, except that I am weaker than I ought to be, and that a sort of weary indolence hangs about me like a fog. M—— is wonderfully better, and her husband has taken a house for them at Norwood. If I could be rejoiced at anything, I should be at that; but it seems to me as if since that awful journey when I first left England, "the springs was broke," as that vagabond tout said at Naples.

It has turned very cold here, and we are uncertain when to leave for Florence, but probably next week. The Carnival is the most entirely childish bosh I have ever met with among grown people. Want to finish this now for post, but will write again speedily. Moseley's proposition is entirely to my mind, and I have often talked of it. The R.S. rooms ought to be house-of-call and quasi-club for all F.R.S. in London.

Wife is bonny, barring a cold. It is as much as I can do to prevent her sporting a mask and domino!

With best love—Ever yours, T. H. H.

HOTEL VICTORIA, ROME,
VIA DEI DUE MACELLI, *Feb.* 16, 1885.

MY DEAR DONNELLY—I have had it on my mind to write to you for the last week—ever since the hideous news about Gordon reached us. But partly from a faint hope that his wonderful fortune might yet have stood him in good stead, and partly because there is no great satisfaction in howling with rage, I have abstained.

Poor fellow! I wonder if he has entered upon the "larger sphere of action" which he told me was reserved for him in case of such a trifling accident as death. Of all the people whom I have

met with in my life, he and Darwin are the two in whom I have found something bigger than ordinary humanity—an unequalled simplicity and directness of purpose—a sublime unselfishness.

Horrible as it is to us, I imagine that the manner of his death was not unwelcome to himself. Better wear out than rust out, and better break than wear out. The pity is that he could not know the feeling of his countrymen about him.

I shall be curious to see what defence the superingenious Premier has to offer for himself in Parliament. I suppose, as usual, the question will drift into a brutal party fight, when the furious imbecility of the Tories will lead them to spoil their case. That is where we are; on the one side, timid imbecility "waiting for instructions from the constituencies"; furious imbecility on the other, looking out for party advantage. Oh! for a few months of William Pitt.

I see you think there may be some hope that Gordon has escaped yet. I am afraid the last telegram from Wolseley was decisive. We have been watching the news with the greatest anxiety, and it has seemed only to get blacker and blacker.

. . . . . .

[Touching a determined effort to alter the management of certain Technical Education business.]

I trust he may succeed, and that the unfitness of these people to be trusted with anything may be demonstrated. I regret I am not able to help in the good work. Get the thing out of their hands as fast as possible. The prospect of being revenged for all the beastly dinners I sat out and all the weary discussions I attended to on purpose, really puts a little life into me. Apropos of that, I am better in various ways, but curiously weak and washed out; and I am afraid that not even the prospect of a fight would screw me up for long. I don't understand it, unless I have some organic disease of which nobody can find any trace (and in which I do not believe myself), or unless the terrible trouble we have had has accelerated the advent of old age. I rather suspect that the last speculation is nearest the truth. You will be glad to hear that my poor girl is wonderfully better, and, indeed, to all appearance quite well. They are living quietly at Norwood.

I shall be back certainly by the 12th April, probably before. We have found very good quarters here, and have waited for the weather to get warmer before moving; but at last we have made up our minds to begin nomadising again next Friday. We go to Florence, taking Siena, and probably Pisa, on our way, and reaching Florence some time next week. Address—Hotel Milano, Via Cerretani.

For the last week the Carnival has been going on. It strikes me as the most elaborate and dreariest tomfoolery I have ever seen, but I doubt if I am in the humour to judge it fairly. It is only

just to say that it entertains my vigorous wife immensely. I hav been expecting to see her in mask and domino, but happily this i the last day, and there is no sign of any yet. I have never see any one so much benefited by rest and change as she is, and tha is a good thing for both of us.

After Florence we shall probably make our way to Venice, an come home by the Lago di Garda and Germany. But I will le you know when our plans are settled.

With best love from we two to you two—Ever yours,

T. H. HUXLEY.

TO HIS YOUNGEST DAUGHTER

SIENA, *Feb.* 23, 1885.

DEAREST ETHEL—The cutting you sent me contains one of the numerous "goaks" of a Yankee performing donkey who is allowed to dispart himself in one of the New York papers. I confess it is difficult to see the point of the joke, but there is one if you look close. I don't think you need trouble to enlighten the simple inquirer. He probably only wanted the indignant autograph which he won't get.

The Parker Museum must take care of itself. The public ought to support it, not the men of science.

As a grandfather, I am ashamed of my friends who are of the same standing; but I think they would take it as a liberty if, in accordance with your wish, I were to write to expostulate.

After your mother had exhausted the joys of the Carnival, she permitted me to leave Rome for this place, where we arrived last Friday evening. My impression is that if we had stayed in Rome much longer we should never have left. There is something idle and afternoony about the air which whittles away one's resolution.

The change here is wonderfully to the good. We are perched more than a thousand feet above the sea, looking over the Tuscan hills for twenty or thirty miles every way. It is warm enough to sit with the window wide open and yet the air is purer and more bracing than in any place we have visited. Moreover, the hotel (Grande Albergo) is very comfortable.

Then there is one of the most wonderful cathedrals to be seen in all North Italy—free from all the gaudy finery and atrocious bad taste which have afflicted me all over South Italy. The town is the quaintest place imaginable—built of narrow streets on several steep hills to start with, and then apparently stirred up with a poker to prevent monotony of effect.

Moreover, there is Catherine of Siena, of whom I am reading a delightful Catholic life by an Italian father of the Oratory. She died 500 years ago, but she was one of twenty-five children, and I

think some of them must have settled in Kent and allied themselves with the Heathorns. Otherwise, I don't see why her method of writing to the Pope should have been so much like the way my daughters (especially the youngest) write to their holy father.

I wish she had not had the stigmata—I am afraid there must have been a *leetle* humbug about the business—otherwise she was a very remarkable person, and you need not be ashamed of the relationship.

I suppose we shall get to Florence some time this week; the address was sent to you before we left Rome—Hotel Milano, Via Cerretti. But I am loth to leave this lovely air in which, I do believe, I am going to pick up at last. The misfortune is that we did not intend to stay here more than three days, and so had letters sent to Florence. Everybody told us it would be very cold, and, as usual, everybody told taradiddles.

M—— unites in fondest love to you all.—Ever your loving father, T. H. HUXLEY.

TO HIS SON

SIENA, *Feb.* 25, 1885.

. . If you had taken to physical science it would have been delightful to me for us to have worked together, and I am half inclined to take to history that I may earn that pleasure. I could give you some capital wrinkles about the physical geography and prehistoric history (excuse bull) of Italy for a Roman History primer! Joking apart, I believe that history might be, and ought to be, taught in a new fashion so as to make the meaning of it as a process of evolution—intelligible to the young. The Italians have been doing wonders in the last twenty years in prehistoric archæology, and I have been greatly interested in acquainting myself with the general results of their work.

We moved here last Friday, and only regret that the reports of the weather prevented us from coming sooner. More than 1000 ft. above the sea, in the midst of a beautiful hill country, and with the clearest and purest air we have met with in Italy, Siena is perfectly charming. The window is wide open and I look out upon a vast panorama, something like that of the Surrey hills, only on a larger scale—"Raw Siena," "Burnt Siena," in the foreground, where the colour of the soil is not hidden by the sage green olive foliage, purple mountains in the distance.

The old town itself is a marvel of picturesque crookedness, and the cathedral a marvel. M. and I have been devoting ourselves this morning to St. Catarina and Sodoma's pictures.

I am reading a very interesting life of her by Capecelatro, and, if my liver continues out of order, may yet turn Dominican.

However, the place seems to be doing me good, and I may yet, like another person, decline to be a monk.

TO HIS DAUGHTER, MRS. ROLLER

March 8.

The great merit of Rome is that you have never seen the end of it. M. and I have not worked very hard at our galleries and churches, but I have got so far as a commencing dislike for the fine arts generally. Perhaps after a week or two I shall take to science out of sheer weariness.

HOTEL DE MILANO, FLORENCE,
March 12, 1885.

MY DEAR FOSTER—My wife and I send you our hearty good wishes (antedated by four days). I am not sure we ought not to offer our best thanks to your mother for providing us with as staunch a friend as people ever were blessed with. It is possible that she did not consider that point nine and forty years ago; but we are just as grateful as if she had gone through it all on our own account.

We start on our way homeward to-morrow or next day, by Bologna to Venice, and then to England by the way we came—taking it easy. The Brenner is a long way round and I hear very cold. I think we may stay a few days at Lugano, which I liked very much when there before. Florence is very charming, but there is not much to be said for the climate. My wife has been bothered with sore throat, to which she is especially liable, ever since we have been here. Old residents console her with the remark that Florentine sore throat is a regular thing in the spring. The alternations of heat and cold are detestable. So we stand thus—*Naples*, bad for both—*Rome*, good for her, bad for me—*Florence*, bad for her, baddish for me. Venice has to be tried, but stinks and mosquitoes are sure to render it impossible as soon as the weather is warm. Siena is the only place that suited both of us, and I don't think that would exactly answer to live in. Nothing like foreign travel for making one content with home.

I shall have to find a country lot suited to my fortunes when I am paid off. Couldn't you let us have your gardener's cottage? My wife understands poultry and I shall probably have sufficient strength to open the gate and touch my hat to the Dons as they drive up. I am afraid E. is not steady enough for waiting-maid or I would offer her services.

. . . I am rejoiced to hear that the lessons and the questions are launched. They loom large to me as gigantic undertakings, in which a dim and speculative memory suggests I once took part, but probably it is a solar myth, and I am too sluggish to feel much compunction for the extra trouble you have had.

Perhaps I shall revive when my foot is on my native heath in the shady groves of the Evangelist.[1]

My wife is out photograph hunting—nothing diminishes her activity—otherwise she would join in love and good wishes to Mrs. Foster and yourself.—Ever yours, T. H. HUXLEY.

The two worst and most depressing periods of this vain pilgrimage in pursuit of health, were the stay at Rome and at Florence. At the latter town he was inexpressibly ill and weak; but his daily life was brightened by the sympathy and active kindness of Sir Spencer Walpole, who would take him out for short walks, talking as little as possible, and shield him from the well-meant but tactless attentions of visitors who would try to "rouse him and do him good" by long talks on scientific questions.

His physical condition, indeed, was little improved.

As for my unsatisfactory carcase (he writes on March 6, to Sir J. Donnelly), there seems nothing the matter with it now except that the brute objects to work. I eat well, drink well, sleep well, and have no earthly ache, pain or discomfort. I can walk for a couple of hours or more without fatigue. But half an hour's talking wearies me inexpressibly, and "saying a few words," would finish me for the day. For all that, I do not mean to confess myself finally beaten till I have had another try.

That is to say, he was still bent upon delivering his regular course of lectures at South Kensington as soon as he returned, in spite of the remonstrances of his wife and his friends.

In the same letter he contrasts Florence with Siena and its "fresh, elastic air," its "lovely country that reminds one of a magnified version of the Surrey weald." The Florentine climate was trying.[2] "And then there is the awful burden of those miles of 'treasures of art.'" He had been to the

[1] St. John's Wood.

[2] A week later he writes to Sir J. Evans—"I begin to look forward with great satisfaction to the equability of English weather—to that dear little island where doors and windows shut close—where fires warm without suffocating—where the chief business of the population in the streets is something else than expectoration—and where I shall never see fowl with salad again.

"You perceive I am getting better by this prolonged growl. . . . But half an hour's talking knocks me up, and I am such an effete creature that I think of writing myself p. R. S. with a small p."

Uffizii; "and there is the Pitti staring me in the face like drear fate. Why can't I have the moral courage to come back and say I haven't seen it? I should be the most distinguished of men."

There is another reference to Gordon:—

What an awful muddle you are all in in the bright little, tight little island. I hate the sight of the English papers. The only good thing that has met my eye lately is a proposal to raise a memorial to Gordon. I want to join in whatever is done, and unless it will be time enough when I return, I shall be glad if you will put me down for £5 to whatever is the right scheme.

The following to his daughter, Mrs. Roller, describes the stay in Florence.

HOTEL DE MILANO, FLORENCE,
March 7, 1885.

We have been here more than a week and have discovered two things, first that the wonderful "art treasures," of which all the world has heard, are a sore burden to the conscience if you don't go to see them, and an awful trial to the back and legs if you do; and thirdly, that the climate is productive of a peculiar kind of relaxed throat. M.'s throat discovered it, but on enquiry, it proved to be a law of nature, at least, so the oldest inhabitants say. We called on them to-day.

But it is a lovely place for all that, far better than Rome as a place to live in, and full of interesting things. We had a morning at the Uffizii the other day, and came back with minds enlarged and backs broken. To-morrow we contemplate attacking the Pitti, and doubt not the result will be similar. By the end of the week our minds will probably [be] so large, and the small of the back so small that we should probably break if we stayed any longer, so think it prudent to be off to Venice. Which Friday is the day we go, reaching Venice Saturday or Sunday. Pension Suisse, Canal Grande, as before. And mind we have letters waiting for us there, or your affectionate Pater will emulate the historical "cocky."

I got much better at Siena, probably the result of the medicinal nature of the city, the name of which, as a well-instructed girl like you knows, is derived from the senna, which grows wild there, and gives the soil its peculiar pigmentary character.

But unfortunately I forgot to bring any with me, and the effect went off during the first few days of our residence here, when I was, as the Italians say, "molto basso nel bocca." However I am picking up again now, and if people wouldn't call upon us, I feel there might be a chance for me.

I except from that remark altogether the dear Walpoles who are here and as nice as ever. Mrs. Walpole's mother and sister live here, and the W.'s are on a visit to them but leave on Wednesday. They go to Venice, but only for two or three days.

We shall probably stay about a fortnight in Venice, and then make our way back by easy stages to London. We are wae to see you all again.

Doctor M—— [Mrs. Huxley] has just been called in to a case of sore throat in the person of a young lady here, and is quite happy. The young lady probably will not be, when she finds herself converted into a sort of inverted mustard-pot, with the mustard outside! She is one of a very nice family of girls, who (by contrast) remind us of our own.—Ever your loving (to all) father, PATER.

Mrs. M—— has just insisted on seeing this letter.

TO HIS YOUNGEST DAUGHTER

HOTEL BEAU SÉJOUR, SAN REMO,
March 30, 1885.

DEAREST BABS—We could not stand "beautiful Venice the pride of the sea" any longer. It blew and rained and colded for eight-and-forty hours consecutively. Everybody said it was a most exceptional season, but that did not make us any warmer or prevent your mother from catching an awful cold. So as soon as she got better we packed up and betook ourselves here by way of Milan and Genoa. At Milan it was so like London on a wet day, that except for the want of smoke we might have been in our dear native land. At Genoa we arrived late one afternoon and were off early in the morning—but by dint of taking a tram after dinner (not a dram) and going there and back again we are able to say we have seen that city of palaces. The basements we saw through the tram windows by mixed light of gas and moon may in fact all have belonged to palaces. We are not in a position to say they did not.

The quick train from Genoa here is believed to go fully twenty-five miles an hour, but starts at 7 A.M., but the early morning air being bad for the health, we took the slow train at 9.30, and got here some time in the afternoon. But mind you it is a full eighty miles, and when we were at full speed between the stations—very few donkeys could have gone faster. But the coast scenery is very pretty, and we didn't mind.

Here we are very well off and as nearly warm as I expect to be before reaching England. You can sit out in the sun with satisfaction, though there is a little knife-edge of wind just to remind us of Florence. Everybody, however, tells us it is quite an exceptional

season, and that it ought to be the most balmy air imaginable. Besides there are no end of date-palms and cactuses and aloes and odorous flowers in the garden—and the loveliest purple sea you can imagine.

Well, we shall stop some days and give San Remo a chance—at least a week, unless the weather turns bad.

As to your postcards which have been sent on from Venice and are really shabby, I am not going to any dinners whatsoever, either Middle Temple or Academy. Just write to both that "Mr. H. regrets he is unable to accept the invitation with which —— have honoured him."[1]

I have really nothing the matter with me now—but my stock of strength is not great, and I can't afford to spend any on dinners.

The blessedest thing now will be to have done with the nomadic life of the last five months—and see your ugly faces (so like their dear father) again. I believe it will be the best possible tonic for me.

M—— has not got rid of her cold yet, but a few warm days here will, I hope, set her up.

I met Lady Whitworth on the esplanade to-day—she is here with Sir Joseph, and this afternoon we went to call on her. The poor old man is very feeble and greatly altered since I saw him last.

Write here on receiving this. We shall take easy stages home, but I don't know that I shall be able to give you any address.

M—— sends heaps of love to all (including Charles[2])—Ever your loving father, T. H. HUXLEY.

Tell the "Micropholis" man that it is a fossil lizard with an armour of small scales.

[1] "It's like putting the shutters up," he said sadly to his wife, when he felt unable to attend the Royal Academy dinner as he had done for many years.

[2] The cat.

CHAPTER VII

1885

ON April 8, he landed at Folkestone, and stayed there a day or two before going to London. Writing to Sir J. Donnelly, he remarks with great satisfaction at getting home :—

We got here this afternoon after a rather shady passage from Boulogne, with a strong north wind in our teeth all the way, and rain galore. For all that, it is the pleasantest journey I have made for a long time—so pleasant to see one's own dear native mud again. There is no foreign mud to come near it.

And on the same day he sums up to Sir M. Foster the amount of good he has gained from his expedition, and the amount of good any patient is likely to get from travel :—

As for myself I have nothing very satisfactory to say. By the oddest chance we met Andrew Clark in the boat, and he says I am a very bad colour—which I take it is the outward and visible sign of the inward and carnal state. I may sum that up by saying that there is nothing the matter but weakness and indisposition to do anything, together with a perfect genius for making mountains out of molehills.

After two or three fine days at Venice, we have had nothing but wet or cold—or hot and cold at the same time, as in that prodigious imposture the Riviera. Of course it was the same story everywhere, "perfectly unexampled season."

Moral.—If you are perfectly well and strong, brave Italy—but in search of health stop at home.

It has been raining cats and dogs, and Folkestone is what some

people would call dreary. I could go and roll in the mud with satisfaction that it is English mud.

It will be jolly to see you again. ' Wife unites in love.—Ever yours, T. H. HUXLEY.

To return home was not only a great pleasure; it gave him a fillip for the time, and he writes to Sir M. Foster, April 12 :—

It is very jolly to be home, and I feel better already. Clark has just been here overhauling me, and feels very confident that he shall screw me up.

I have renounced dining out and smoking (!!!) by way of preliminaries. God only knows whether I shall be permitted more than the smell of a mutton chop for dinner. But I have great faith in Andrew, who set me straight before when other "physicians' aid was vain."

But his energy was fitful; lassitude and depression again invaded him. He was warned by Sir Andrew Clark to lay aside all the burden of his work. Accordingly, early in May, just after his sixtieth birthday, he sent in his formal resignation of the Professorship of Biology, and the Inspectorship of Salmon Fisheries; while a few days later he laid his resignation of the Presidency before the Council of the Royal Society. By the latter he was begged to defer his final decision, but his health gave no promise of sufficient amendment before the decisive Council meeting in October.

He writes on May 27 :—

I am convinced that what with my perennial weariness and my deafness I ought to go, whatever my kind friends may say.

A curious effect of his illness was that for the first time in his life he began to shrink involuntarily from assuming responsibilities and from appearing on public occasions; thus he writes on June 16 :—

I am sorry to say that the perkiness of last week[1] was only a spurt, and I have been in a disgusting state of blue devils lately. Can't make out what it is, for I really have nothing the matter, except a strong tendency to put the most evil construction upon everything.

[1] *i.e.* at the unveiling of the Darwin statue at South Kensington. See p. 112.

I am fairly dreading to-morrow [*i.e.* receiving the D.C.L. degree at Oxford[1]] but why I don't know—probably an attack of modesty come on late in life and consequently severe.

Very likely it will do me good and make me "fit" for Thursday [*i.e.* Council and ordinary meetings of Royal Society].

And a month later:—

I have been idling in the country for two or three days—but like the woman with the issue, "I am not better but rather worse" —blue devils and funk—funk and blue devils. Liver, I expect. [An ailment of which he says to Prof. Marsh, "I rather wish I had some respectable disease—it would be livelier."]

And again:—

Everybody tells me I look so much better, that I am really ashamed to go growling about, and confess that I am continually in a blue funk and hate the thought of any work—especially of scientific or anything requiring prolonged attention.

At the end of July he writes to Sir W. Flower—

4 MARLBOROUGH PLACE,
July 27, 1885.

MY DEAR FLOWER—I am particularly glad to hear that things went right on Saturday, as my conscience rather pricked me for my desertion of the meeting.[2] But it was the only chance we had of seeing our young married couple before the vacation—and you will rapidly arrive at a comprehension of the cogency of *that* argument now.

I will think well of your kind words about the Presidency. If I could only get rid of my eternal hypochondria the work of the R.S. would seem little enough. At present, I am afraid of everything that involves responsibility to a degree that is simply ridiculous. I only wish I could shirk the inquiries I am going off to hold in Devonshire!

P.R.S. in a continual blue funk is not likely to be either dignified or useful; and unless I am in a better frame of mind in October I am afraid I shall have to go.—Ever yours very faithfully,

T. H. HUXLEY.

A few weeks at Filey in August did him some good at first; and he writes cheerfully of his lodgings in "a place with

[1] See p. 110.
[2] British Museum Trustees, July 25.

the worst-fitting doors and windows, and the hardest chairs, sofas, and beds known to my experience."

He continues :—

I am decidedly picking up. The air here is wonderful, and as we can set good cookery against hard lying (I don't mean in the Munchausen line) the consequent appetite becomes a mild source of gratification. Also, I have not met with more than two people who knew me, and that in my present state is a negative gratification of the highest order.

Later on he tried Bournemouth; being no better, he thought of an entirely new remedy.

The only thing I am inclined to do is to write a book on Miracles. I think it might do good and unload my biliary system.

In this state of indecision, so unnatural to him, he writes to Sir M. Foster :—

I am anything but clear as to the course I had best take myself. While undoubtedly much better in general health, I am in a curious state of discouragement, and I should like nothing better than to remain buried here (Bournemouth) or anywhere else, out of the way of trouble and responsibility. It distresses me to think that I shall have to say something definite about the Presidency at the meeting of Council in October.

Finally on October 20, he writes :—

I think the lowest point of my curve of ups and downs is gradually rising—but I have by no means reached the point when I can cheerfully face anything. I got over the Board of Visitors (two hours and a half) better than I expected, but my deafness was a horrid nuisance.

I believe the strings of the old fiddle will tighten up a good deal, if I abstain from attempting to play upon the instrument at present — but that a few jigs now will probably ruin that chance.

But I will say my final word at our meeting next week. I would rather step down from the chair than dribble out of it. Even the devil is in the habit of departing with a "melodious twang," and I like the precedent.

So at the Anniversary meeting on November 30, he definitely announced in his last Presidential address his resignation of that "honourable office" which he could no

longer retain "with due regard to the interests of the Society, and perhaps, I may add, of self-preservation."

I am happy to say (he continued) that I have good reason to believe that, with prolonged rest—by which I do not mean idleness, but release from distraction and complete freedom from those lethal agencies which are commonly known as the pleasures of society—I may yet regain so much strength as is compatible with advancing years. But in order to do so, I must, for a long time yet, be content to lead a more or less anchoritic life. Now it is not fitting that your President should be a hermit, and it becomes me, who have received so much kindness and consideration from the Society, to be particularly careful that no sense of personal gratification should delude me into holding the office of its representative one moment after reason and conscience have pointed out my incapacity to discharge the serious duties which devolve upon the President, with some approach to efficiency.

I beg leave, therefore, with much gratitude for the crowning honour of my life which you have conferred upon me, to be permitted to vacate the chair of the Society as soon as the business of this meeting is at an end.

The settlement of the terms of the pension upon which, after thirty-one years of service under Government, he retired from his Professorship at South Kensington and the Inspectorship of Fisheries, took a considerable time. The chiefs of his own department, that of Education, wished him to retire upon full pay, £1500 (see p. 20.) The Treasury were more economical. It was the middle of June before the pension they proposed of £1200 was promised; the end of July before he knew what conditions were attached to it.

On June 20, he writes to Mr. Mundella, Vice-President of the Council:—

MY DEAR MUNDELLA—Accept my warmest thanks for your good wishes, and for all the trouble you have taken on my behalf. I am quite ashamed to have been the occasion of so much negotiation.

Until I see the Treasury letter, I am unable to judge what the £1200 may really mean,[1] but whatever the result, I shall never forget the kindness with which my chiefs have fought my battle.—I am, yours very faithfully, T. H. HUXLEY.

[1] *i.e.* whether he was to draw his salary of £200 as Dean or not.

On July 16, he writes to Sir M. Foster :—

The blessed Treasury can't make up their minds whether I am to be asked to stay on as Dean or not, and till they do, I can't shake off any of my fetters.

Early in the year he had written to Sir John Donnelly of the necessity of resigning :—

Nevertheless (he added), it will be a sad day for me when I find myself no longer entitled to take part in the work of the schools in which you and I have so long been interested.

But that "sad day" was not to come yet. His connection with the Royal College of Science was not entirely severed. He was asked to continue, as Honorary Dean, a general supervision of the work he had done so much to organise, and he kept the title of Professor of Biology, his successors in the practical work of the chair being designated Assistant Professors.

"I retain," he writes, "general superintendence as part of the great unpaid."

It is a comfort (he writes to his son), to have got the thing settled. My great desire at present is to be idle, and I am now idle with a good conscience.

Later in the year, however, a change of Ministry having taken place, he was offered a Civil List Pension of £300 a year by Lord Iddesleigh. He replied accepting it :—

4 MARLBOROUGH PLACE,
Nov. 24, 1885.

MY DEAR LORD IDDESLEIGH—Your letters of the 20th November reached me only last night, and I hasten to thank you for both of them. I am particularly obliged for your kind reception of what I ventured to say about the deserts of my old friend Sir Joseph Hooker.

With respect to your Lordship's offer to submit my name to Her Majesty for a Civil List Pension, I can but accept a proposal which is in itself an honour, and which is rendered extremely gratifying to me by the great kindness of the expressions in which you have been pleased to embody it.

I am happy to say that I am getting steadily better at last, and

under the regime of "peace with honour" that now seems to have fallen to my lot, I may fairly hope yet to do a good stroke of work or two.—I remain, my dear Lord Iddesleigh, faithfully yours,

T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Nov. 24, 1885.

MY DEAR DONNELLY—I believe you have been at work again!

Lord Iddesleigh has written to me to ask if I will be recommended for a Civil List Pension of £300 a year, a very pretty letter, not at all like the Treasury masterpiece you admired so much.

Didn't see why I should not accept, and have accepted accordingly. When the announcement comes out the Liberals will say the Tory Govt. have paid me for attacking the G.O.M.! to a dead certainty.—Ever yours, T. H. HUXLEY.

Five days later he replies to the congratulations of Mr. Eckersley (whose son had married Huxley's third daughter):—

. . . Lord Iddesleigh's letter offering to submit my name for an honorary pension was a complete surprise.

My chiefs in the late Government wished to retire me on full pay, but the Treasury did not see their way to it, and cut off £300 a year. Naturally I am not sorry to have the loss made good, but the way the thing was done is perhaps the pleasantest part of it.

There was a certain grim appropriateness in his "official death" following hard upon his sixtieth birthday, for sixty was the age at which he had long declared that men of science ought to be strangled, lest age should harden them against the reception of new truths, and make them into clogs upon progress, the worse, in proportion to the influence they had deservedly won. This is the allusion in a birthday letter from Sir M. Foster:—

REVEREND SIR—So the "day of strangulation" has arrived at last, and with it the humble petition of your friends that you may be induced to defer the "happy dispatch" for, say at least ten years, when the subject may again come up for consideration. For your petitioners are respectfully inclined to think that if your sixtyship may be induced so far to become an apostle as to give up the fishery business, and be led to leave the Black Board at S.K. to others, the

t'other side sixty years, may after all be the best years of your life. In any case they would desire to bring under your notice the fact that *they feel they want you as much as ever they did.*—Ever thine,

M. F.

Reference has been made to the fact that the honorary degree of D.C.L. was conferred this May upon Huxley by the University of Oxford. The Universities of the sister kingdoms had been the first thus to recognise his work; and after Aberdeen and Dublin, Cambridge, where natural science had earlier established a firm foothold, showed the way to Oxford. Indeed, it was not until his regular scientific career was at an end, that the University of Oxford opened its portals to him. So, as he wrote to Professor Bartholomew Price on May 20, in answer to the invitation, "It will be a sort of apotheosis coincident with my official death, which is imminent. In fact, I am dead already, only the Treasury Charon has not yet settled the conditions upon which I am to be ferried over to the other side."

Before leaving the subject of his connection with the Royal Society, it may be worth while to give a last example of the straightforward way in which he dealt with a delicate point whether to vote or not to vote for his friend Sir Andrew Clark who had been proposed for election to the Society. It occurred just after his return from abroad; he explains his action to Sir Joseph Hooker, who had urged caution on hearing a partial account of the proceedings.

SOUTH KENSINGTON,
April 25, 1885.

MY DEAR HOOKER—I don't see very well how I could have been more cautious than I have been. I knew nothing of Clark's candidature until I saw his name in the list; and if he or his proposer had consulted me, I should have advised delay, because I knew very well there would be a great push made for —— this year.

Being there, however, it seemed to me only just to say that which is certainly true, namely, that Clark has just the same claim as half a dozen doctors who have been admitted without question, *e.g.* Gull, Jenner, Risdon Bennett, on the sole ground of standing in the profession. And I think that so long as that claim is admitted, it will be unjust not to admit Clark.

So I said what you heard; but I was so careful not to press unduly upon the Council, that I warned them of the possible prejudice arising from my own personal obligations to Clark's skill, and I went so far as not to put his name in the *first* list myself, a step which I now regret.

If this is not caution enough, I should like to know what is? As Clive said when he came back from India, "By God, sir, I am astonished at my own moderation!".

If it is not right to make a man a fellow because he holds a first-class place as a practitioner of medicine as the R.S. has done since I have known it, let us abolish the practice. But then let us also in justice refuse to recognise the half-and-half claims, those of the people who are third-rate as practitioners, and hang on to the skirts of science without doing anything in it.

Several of your and my younger scientific friends are bent on bringing in their chum ——, and Clark's candidature is very inconvenient to them. Hence I suspect some of the "outspoken aversion" and criticism of Clark's claims you have heard.

I am quite willing to sacrifice my friend for a principle, but not for somebody else's friend, and I mean to vote for Clark; though I am not going to try to force my notion down any one else's throat.
—Ever yours faithfully, T. H. HUXLEY.

On the same subject he writes to Sir M. Foster:—

Obedience be hanged. It would not lie in my mouth, as the lawyers say, to object to anybody's getting his own way if he can.

If Clark had not been a personal friend of mine I should not have hesitated a moment about deciding in his favour. Under the circumstances it was quite clear what I should do if I were forced to decide, and I thought it would have been kindly and courteous to the President if he had been let off the necessity of making a decision which was obviously disagreeable to him.

If, on the other hand, it was wished to fix the responsibility of what happened on him, I am glad that he had the opportunity of accepting it. I never was more clear as to what was the right thing to do.

So also at other times; he writes in September to Sir M. Foster, the Secretary, with reference to evening gatherings at which smoking should be permitted.

BOURNEMOUTH, *Sept.* 17, 1885.

I am not at all sure that I can give my blessing to the "Tabagie." When I heard of it I had great doubts as to its being

a wise move. It is not the question of "smoke" so much, as the principle of having meetings in the Society's rooms, which are not practically (whatever they may be theoretically), open to all the fellows, and which will certainly be regarded as the quasi-private parties of one of the officers. You will have all sorts of jealousies roused, and talk of a clique, etc.

When I was Secretary the one thing I was most careful to avoid was the appearance of desiring to exert any special influence. But there was a jealousy of the *x* Club, and only the other day, to my great amusement, I was talking to an influential member of the Royal Society Club about the possibility of fusing it with the Phil. Club, and he said, forgetting I was a member of the latter: "Oh! we don't want any of those wire-pullers!" Poor dear innocent dull-as-ditchwater Phil. Club!

Mention has already been made of the unveiling of the Darwin statue at South Kensington on June 9, when, as President of the Royal Society, Huxley delivered an address in the name of the Memorial Committee, on handing over the statue of Darwin to H.R.H. the Prince of Wales, as representative of the Trustees of the British Museum. The concluding words of the speech deserve quotation :—

We do not make this request [*i.e.* to accept the statue] for the mere sake of perpetuating a memory; for so long as men occupy themselves with the pursuit of truth, the name of Darwin runs no more risk of oblivion than does that of Copernicus, or that of Harvey.

Nor, most assuredly, do we ask you to preserve the statue in its cynosural position in this entrance hall of our National Museum of Natural History as evidence that Mr. Darwin's views have received your official sanction; for science does not recognise such sanctions, and commits suicide when it adopts a creed.

No, we beg you to cherish this memorial as a symbol by which, as generation after generation of students enter yonder door, they shall be reminded of the ideal according to which they must shape their lives, if they would turn to the best account the opportunities offered by the great institution under your charge.

Nor was this his only word about Darwin. Somewhat later, Professor Mivart sent him the proofs of an article on Darwin, asking for his criticism, and received the following reply, which describes better than almost any other document, the nature of the tie which united Darwin and his

friends, and incidentally touches the question of Galileo's recantation :—

Nov. 12, 1885.

MY DEAR MR. MIVART—I return your proof with many thanks for your courtesy in sending it. I fully appreciate the good feeling shown in what you have written, but as you ask my opinion, I had better say frankly that my experience of Darwin is widely different from yours as expressed in the passages marked with pencil. I have often remarked that I never knew any one of his intellectual rank who showed himself so tolerant to opponents, great and small, as Darwin did. Sensitive he was in the sense of being too ready to be depressed by adverse comment, but I never knew any one less easily hurt by fair criticism, or who less needed to be soothed by those who opposed him with good reason.

I am sure I tried his patience often enough, without ever eliciting more than a "Well there's a good deal in what you say; but—" and then followed something which nine times out of ten showed he had gone deeper into the business than I had.

I cannot agree with you, again, that the acceptance of Darwin's views was in any way influenced by the strong affection entertained for him by many of his friends. What that affection really did was to lead those of his friends who had seen good reason for his views to take much more trouble in his defence and support, and to strike out much harder at his adversary than they would otherwise have done. This is pardonable if not justifiable—that which you suggest would to my mind be neither.

I am so ignorant of what has been going on during the last twelvemonth, that I know nothing of your controversy with Romanes. If he is going to show the evolution of intellect from sense, he is the man for whom I have been waiting, as Kant says.

In your paper about scientific freedom, which I read some time ago with much interest, you alluded to a book or article by Father Roberts on the Galileo business. Will you kindly send me a post-card to say where and when it was published.

I looked into the matter when I was in Italy, and I arrived at the conclusion that the Pope and the College of Cardinals had rather the best of it. It would complete the paradox if Father Roberts should help me to see the error of my ways.—Ever yours very faithfully, T. H. HUXLEY.

August and September, as said above, were spent in England, though with little good effect. Filey was not a success for either himself or his wife. Bournemouth, where they joined their eldest daughter and her family, offered a

"temperature much more to the taste of both of us," and at least undid the mischief done by the wet and cold of the north.

The mean line of health was gradually rising; it was a great relief to be free at length from administrative distractions, while the retiring pensions removed the necessity of daily toil. By nature he was like the friend whom he described as "the man to become hipped to death, without incessant activity of some sort or other. I am sure that the habit of incessant work into which we all drift is as bad in its way as dram-drinking. In time you cannot be comfortable without the stimulus." But the variety of interests which filled his mind prevented him from feeling the void of inaction after a busy life. And just as he was at the turning-point in health, he received a fillip which started him again into vigorous activity—the mental tonic bracing up his body and clearing away the depression and languor which had so long beset him.

The lively fillip came in the shape of an article in the November *Nineteenth Century*, by Mr. Gladstone, in which he attacked the position taken up by Dr. Réville in his *Prolegomena to the History of Religions*, and in particular, attempted to show that the order of creation given in Genesis i., is supported by the evidence of science. This article, Huxley used humorously to say, so stirred his bile as to set his liver right at once; and though he denied the soft impeachment that the ensuing fight was what had set him up, the marvellous curative effects of a Gladstonian dose, a remedy unknown to the pharmacopœia, became a household word among family and friends.

His own reply, "The Interpreters of Genesis and the Interpreters of Nature," appeared in the December number of the *Nineteenth Century* (*Collected Essays*, iv. p. 139). In January 1886 Mr. Gladstone responded with his "Proem to Genesis," which was met in February by "Mr. Gladstone and Genesis" (*Collected Essays*, iv. p. 164). Not only did he show that science offers no support to the "fourfold" or the "fivefold" or any other order obtained from Genesis by Mr. Gladstone, but in a note appended to his second article he gives what he takes to be the proper sense of the

"Mosaic" narrative of the Creation (iv. p. 195), not allowing the succession of phenomena to represent an evolutionary notion, as suggested, of a progress from lower to higher in the scale of being, a notion assuredly not in the mind of the writer, but deducing this order from such ideas as, putting aside our present knowledge of nature, we may reasonably believe him to have held.

A vast subsidiary controversy sprang up in the *Times* on Biblical exegetics; where these touched him at all, as, for instance, when it was put to him whether the difference between the "Rehmes" of Genesis and "Sheh-retz" of Leviticus, both translated "creeping things," did not invalidate his argument as to the identity of such "creeping things," he had examined the point already, and surprised his interrogator, who appeared to have raised a very pretty dilemma, by promptly referring him to a well-known Hebrew commentator.

Several letters refer to this passage of arms. On December 4, he writes to Mr. Herbert Spencer:—

Do read my polishing off of the G.O.M. I am proud of it as a work of art, and as evidence that the volcano is not yet exhausted.

To Lord Farrer

4 Marlborough Place,
Dec. 6, 1885.

My dear Farrer—From a scientific point of view Gladstone's article was undoubtedly not worth powder and shot. But, on personal grounds, the perusal of it sent me blaspheming about the house with the first healthy expression of wrath known for a couple of years—to my wife's great alarm—and I should have "busted up" if I had not given vent to my indignation; and secondly, all orthodoxy was gloating over the slap in the face which the G.O.M. had administered to science in the person of Réville.

The ignorance of the so-called educated classes in this country is stupendous, and in the hands of people like Gladstone it is a political force. Since I became an official of the Royal Society, good taste seemed to me to dictate silence about matters on which there is "great division among us." But now I have recovered my freedom, and I am greatly minded to begin stirring the fire afresh.

Within the last month I have picked up wonderfully. If dear old Darwin were alive he would say it is because I have had a fight, but in truth the fight is consequence and not cause. I am infinitely

relieved by getting rid of the eternal strain of the past thirty years, and hope to get some good work done yet before I die, so make ready for the part of the judicious bottle-holder which I have always found you.—Ever yours very faithfully, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Jan. 13, 1886.

MY DEAR FARRER—My contribution to the next round was finished and sent to Knowles a week ago. I confess it to have been a work of supererogation; but the extreme shiftiness of my antagonist provoked me, and I was tempted to pin him and dissect him as an anatomico-psychological exercise. May it be accounted unto me for righteousness, though I laughed so much over the operation that I deserve no credit.

I think your notion is a very good one, and I am not sure that I shall not try to carry it out some day. In the meanwhile, however, I am bent upon an enterprise which I think still more important.

After I have done with the reconcilers, I will see whether theology cannot be told her place rather more plainly than she has yet been dealt with.

However, this between ourselves, I am seriously anxious to use what little stuff remains to me well, and I am not sure that I can do better service anywhere than in this line, though I don't mean to have any more controversy if I can help it.

(Don't laugh and repeat Darwin's wickedness.)—Ever yours very faithfully, T. H. HUXLEY.

However, this "contribution to the next round" seemed to the editor rather too pungent in tone. Accordingly Huxley revised it, the letters which follow describing the process:—

4 MARLBOROUGH PLACE, N.W.,
Jan. 15, 1886.

MY DEAR KNOWLES—I will be with you at 1.30. I spent three mortal hours this morning taming my wild cat. He is now castrated; his teeth are filed; his claws are cut; he is taught to swear like a "mieu"; and to spit like a cough; and when he is turned out of the bag you won't know him from a tame rabbit.—Ever yours,
T. H. HUXLEY.

4 MARLBOROUGH PLACE, N.W.,
Jan. 20, 1886.

MY DEAR KNOWLES—Here is the debonnaire animal finally titivated, and I quite agree, much improved, though I mourn the loss of some of the spice. But it is an awful smash as it stands—worse than the first, I think.

I shall send you the MS. of the *Evolution of Theology* to-day or to-morrow. It will not do to divide it, as I want the reader to have an *aperçu* of the whole process from Samuel of Israel to Sammy of Oxford.

I am afraid it will make thirty or thirty-five pages, but it is really very interesting, though I say it as shouldn't.

Please have it set up in slip, though, as it is written after the manner of a judge's charge, the corrections will not be so extensive, nor the strength of language so well calculated to make a judicious editor's hair stand on end, as was the case with the enclosed (in its unregenerate state).—Ever yours very truly, T. H. HUXLEY.

Some time later, on September 14, 1890, writing to Mr. Hyde Clarke, the philologist, who was ten years his senior, he remarks on his object in undertaking this controversy :—

I am glad to see that you are as active-minded as ever. I have no doubt there is a great deal in what you say about the origin of the myths in Genesis. But my sole point is to get the people who persist in regarding them as statements of fact to understand that they are fools.

The process is laborious, and not yet very fruitful of the desired conviction.

TO SIR JOSEPH PRESTWICH

4 MARLBOROUGH PLACE, N.W.,
January 16, 1886.

MY DEAR PRESTWICH—Accept my best thanks for the volume of your Geology, which has just reached me.

I envy the vigour which has led you to tackle such a task, and I have no doubt that when I turn to your book for information I shall find reason for more envy in the thoroughness with which the task is done.

I see Mr. Gladstone has been trying to wrest your scripture to his own purposes, but it is no good. Neither the fourfold nor the fivefold nor the sixfold order will wash.—Ever yours very faithfully, T. H. HUXLEY.

TO PROFESSOR POULTON[1]

4 MARLBOROUGH PLACE,
Feb. 19, 1886.

DEAR MR. POULTON—I return herewith the number of the *Expositor* with many thanks. Canon Driver's article contains as

[1] Hope Professor of Zoology at Oxford.

clear and candid a statement as I could wish of the position of the Pentateuchal cosmogony from his point of view. If he more thoroughly understood the actual nature of paleontological succession—I mean the species by species replacement of old forms by new,—and if he more fully appreciated the great gulf fixed between the ideas of "creation" and of "evolution," I think he would see (1) that the Pentateuch and science are more hopelessly at variance than even he imagines, and (2) that the Pentateuchal cosmogony does not come so near the facts of the case as some other ancient cosmogonies, notably those of the old Greek philosophers.

Practically, Canon Driver, as a theologian and Hebrew scholar, gives up the physical truth of the Pentateuchal cosmogony altogether. All the more wonderful to me, therefore, is the way in which he holds on to it as embodying theological truth. So far as this question is concerned, on all points which can be tested, the Pentateuchal writer states that which is not true. What, therefore, is his authority on the matter—creation by a Deity—which cannot be tested? What sort of "inspiration" is that which leads to the promulgation of a fable as divine truth, which forces those who believe in that inspiration to hold on, like grim death, to the literal truth of the fable, which demoralises them in seeking for all sorts of sophistical shifts to bolster up the fable, and which finally is discredited and repudiated when the fable is finally proved to be a fable? If Satan had wished to devise the best means of discrediting "Revelation" he could not have done better.

Have you not forgotten to mention the leg of Archæopteryx as a characteristically bird-like structure? It is so, and it is to be recollected that at present we know nothing of the greater part of the skeletons of the older mesozoic mammals—only teeth and jaws. What the shoulder-girdle of Stereognathus might be like is uncertain. —Ever yours very faithfully, T. H. HUXLEY.

The following letters have a curious interest as showing what, in the eyes of a supporter of educational progress, might and might not be done at Oxford to help on scientific education :—

4 MARLBOROUGH PLACE,
Dec. 21, 1885.

MY DEAR MASTER[1]—I have been talking to some of my friends about stimulating the Royal Society to address the Universities on the subject of giving greater weight to scientific acquirements, and

[1] This is from the first draft of the letter. Huxley's letters to Jowett were destroyed by Jowett's orders, together with the rest of his correspondence.

if I find that there is a better prospect than I had hoped for of getting President and Council to move. But I am not quite sure about the course which it will be wisest for us to adopt, and I beg a little counsel on that matter.

I presume that we had better state our wishes in the form of a letter to the Vice-Chancellor, and that we may prudently ask for the substitution for modern languages (especially German) and elementary science for some of the subjects at present required in the literary part of the examinations of the scientific and medical faculties. If we could gain this much it would be a great step, not only in itself, but in its reaction on the schools.—Ever yours very faithfully,

T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Dec. 26, 1885.

MY DEAR FOSTER—Please read the enclosed letter from Jowett (confidentially). I had suggested the possibility of diminishing the Greek and Latin for the science and medical people, but that, you see, he won't have. But he is prepared to load the classical people with science by way of making things fair.

It may be worth our while to go in for this, and trust to time for the other. What say you?

Merry Christmas to you. The G.O.M. is going to reply, so I am likely to have a happy New Year! I expect some fun, and I mean to make it an occasion for some good earnest.—Ever yours very faithfully, T. H. HUXLEY.

So ends 1885, and with it closes another definite period of Huxley's life. Free from official burdens and official restraints, he was at liberty to speak out on any subject; his strength for work was less indeed, but his time was his own; there was hope that he might still recover his health for a few more years. And though the ranks of his friends were beginning to thin, though he writes (May 20, to Professor Bartholomew Price):—

The "gaps" are terrible accompaniments of advancing life. It is only with age that one realises the full truth of Goethe's quatrain:—

Eine Bruche ist ein jeder Tag, etc.

and again:—

The *x* Club is going to smithereens, as if a charge of dynamite had been exploded in the midst of it. Busk is slowly fading away. Tyndall is, I fear, in a bad way, and I am very anxious about Hooker.

Still the club hung together for many years, and outside it were other devoted friends, who would have echoed Dr. Foster's good wishes on the last day of the year :—

A Happy New Year! and many of them, and may you more and more demonstrate the folly of strangling men at sixty.

CHAPTER VIII

1886

THE controversy with Mr. Gladstone indicates the nature of the subject that Huxley took up for the employment of his newly obtained leisure. Chequered as this leisure was all through the year by constant illness, which drove him again and again to the warmth of Bournemouth or the brisk airs of the Yorkshire moors in default of the sovereign medicine of the Alps, he managed to write two more controversial articles this year, besides a long account of the "Progress of Science," for Mr. T. Humphry Ward's book on *The Reign of Queen Victoria*, which was to celebrate the Jubilee year 1887. Examinations—for the last time, however—the meetings of the Eton Governing Body, the business of the Science Schools, the Senate of the London University, the Marine Biological Association, the Council of the Royal Society, and a round dozen of subsidiary committees, all claimed his attention. Even when driven out of town by his bad health he would come up for a few days at a time to attend necessary meetings.

One of the few references of this period to biological research is contained in a letter to Professor Pelseneer of Ghent, a student of the Mollusca, who afterwards completed for Huxley the long unfinished monograph on "Spirula" for the *Challenger* Report.

4 MARLBOROUGH PLACE,
Jan. 8, 1886.

DEAR SIR—Accept my best thanks for the present of your publications. As you may imagine I find that on the cretaceous

crustaceans very interesting. It was a rare chance to find the branchiae preserved.

I am glad to be able to send you a copy of my memoir on the morphology of the Mollusca. It shows signs of age outside, but I beg you to remember that it is 33 years old.

I am rejoiced to think you find it still worth consulting. It has always been my intention to return to the subject some day, and to try to justify my old conclusions—as I think they may be justified.

But it is very doubtful whether my intention will now ever be carried into effect.—I am yours very faithfully,

T. H. HUXLEY.

Mr. Gladstone's second article appeared in the January number of the *Nineteenth Century*, to this the following letter refers:—

4 MARLBOROUGH PLACE, N.W.,
Jan. 21, 1886.

MY DEAR SKELTON—Thanks for your capital bit of chaff. I took a thought and began to mend (as Burns' friend and *my* prototype (G.O.M.) is not yet recorded to have done) about a couple of months ago, and then Gladstone's first article caused such a flow of bile that I have been the better for it ever since.

I need not tell you I am entirely crushed by his reply—still the worm will turn and there is a faint squeak (as of a rat in the mouth of a terrier) about to be heard in the next *Nineteenth*.

But seriously, it is to me a grave thing that the destinies of this country should at present be seriously influenced by a man, who, whatever he may be in the affairs of which I am no judge—is nothing but a copious shuffler, in those which I do understand.—With best wishes to Mrs. Skelton and yourself, ever yours very faithfully,

T. H. HUXLEY.

With the article in the February number of the *Nineteenth Century*, he concluded his tilt with Mr. Gladstone upon the interpretation of Genesis. His supposed "unjaded appetite" for controversy was already satiated; and he begged leave to retire from "that 'atmosphere of contention' in which Mr. Gladstone has been able to live, alert and vigorous beyond the common race of men, as if it were purest mountain air," for the "Elysium" of scientific debate, which "suits my less robust constitution better." A vain hope. Little as he liked controversy at bottom, in spite of the skill—it must be allowed, at times, a pleasurable skill—in using the weapons of debate, he was not to avoid it any

more than he was to avoid the east wind when he went to Bournemouth from early in February till the end of March, of which he writes on February 23 :—

> The "English Naples" is rather Florentine so far as a bitter cold east wind rather below than above 0°C. goes, but from all I hear it is a deal better than London, and I am picking up in spite of it. I wish I were a Holothuria, and could get on without my viscera. I should do splendidly then.

Here he wrote a long article on the "Evolution of Theology" (*Collected Essays*, iv. 287) which appeared in the March and April numbers of the *Nineteenth Century*. It was a positive statement of the views he had arrived at, which underlay the very partial—and therefore misleading—exposition of them possible in controversy. He dealt with the subject, not with reference to the truth or falsehood of the notions under review, but purely as a question of anthropology, "a department of biology to which I have at various times given a good deal of attention." Starting with the familiar ground of the Hebrew Scriptures, he thus explains the paleontological method he proposes to adopt :—

> In the venerable record of ancient life, miscalled a book, when it is really a library comparable to a selection of works from English literature between the times of Beda and those of Milton, we have the stratified deposits (often confused and even with their natural order inverted) left by the stream of the intellectual and moral life of Israel during many centuries. And, embedded in these strata, there are numerous remains of forms of thought which once lived, and which, though often unfortunately mere fragments, are of priceless value to the anthropologist. Our task is to rescue these from their relatively unimportant surroundings, and by careful comparison with existing forms of theology to make the dead world which they record live again.

A subsequent letter to Professor Lewis Campbell, bears upon this essay. It was written in answer to an enquiry prompted by the comparison here drawn between the primitive spiritual theories of the books of Judges and Samuel, and the very similar development of ideas among the Tongans, as described by Mariner, who lived many years among the natives.

HODESLEA, *Oct.* 10, 1894.

MY DEAR CAMPBELL—I took a good deal of trouble years ago to satisfy myself about the point you mention, and I came to the conclusion that Mariner was eminently trustworthy, and that Martin was not only an honest, but a shrewd and, rather critical, reporter. The story he tells about testing Mariner's version of King Theebaw's oration shows his frame of mind (and is very interesting otherwise in relation to oral tradition).

I have a lot of books about Polynesia, but of all I possess and have read, Mariner is to my mind the most trustworthy.

The missionaries are apt to colour everything, and they never have the chance of knowing the interior life as Mariner knew it. It was this conviction that led me to make Mariner my *cheval de bataille* in "Evolution of Theology."

I am giving a great deal of trouble—ill for the last week, and at present with a sharp lumbago! so nice! With our love to Mrs. Campbell and yourself—Ever yours, T. H. H.

The circumstances under which the following letter was written are these. The activity of the Home Rulers and the lethargy of Unionists had caused one side only of the great question then agitating English politics, to be represented in the American press, with the result that the funds of the Nationalists were swelled by subscriptions from persons who might have acted otherwise if the arguments on the other side had been adequately laid before them.

Mr. Albert Grey, M.P., therefore had arranged for a series of clear, forcible pronouncements from strong representative Englishmen against a separate Parliament, to be cabled over to New York to a syndicate of influential newspapers, and his American advisers desired that the opening statement should be from Huxley.

Although it will be seen from the letter that he would not undertake this task, Mr. Grey showed the letter to one or two of the leading Liberal Unionists to strengthen their hands, and begged permission to publish it for the benefit of the whole party. Accordingly, it appeared in the *Times* of April 13, 1886.

CASILINI, W. BOURNEMOUTH,
March 21, 1886.

DEAR MR. GREY—I am as much opposed to the Home Rule scheme as any one can possibly be, and if I were a political man

I would fight against it as long as I had any breath left in me; but I have carefully kept out of the political field all my life, and it is too late for me now to think of entering it.

Anxious watching of the course of affairs for many years past has persuaded me that nothing short of some sharp and sweeping national misfortune will convince the majority of our countrymen that government by average opinion is merely a circuitous method of going to the devil; and that those who profess to lead but in fact slavishly follow this average opinion are simply the fastest runners and the loudest squeakers of the herd which is rushing blindly down to its destruction.

It is the electorate, and especially the Liberal electorate, which is responsible for the present state of things. It has no political education. It knows well enough that 2 and 2 won't make 5 in a ledger, and that sentimental stealing in private life is not to be tolerated; but it has not been taught the great lesson in history that there are like verities in national life, and hence it easily falls a prey to any clever and copious fallacy-monger who appeals to its great heart instead of reminding it of its weak head.

Politicians have gone on flattering and cajoling this chaos of political incompetence until the just penalty of believing their own fictions has befallen them, and the average member of Parliament is conscientiously convinced that it is his duty, not to act for his constituents to the best of his judgment, but to do exactly what they, or rather the small minority which drives them, tells him to do.

Have we a real statesmen? a man of the calibre of Pitt or Burke, to say nothing of Strafford or Pym, who will stand up and tell his countrymen that this disruption of the union is nothing but a cowardly wickedness—an act bad in itself, fraught with immeasurable evil—especially to the people of Ireland; and that if it cost his political existence, or his head, for that matter, he is prepared to take any and every honest means of preventing the mischief?

I see no sign of any. And if such a man should come to the front what chance is there of his receiving loyal and continuous support from a majority of the House of Commons? I see no sign of any.

There was a time when the political madness of one party was sure to be checked by the sanity, or at any rate the jealousy of the other. At the last election I should have voted for the Conservatives (for the first time in my life) had it not been for Lord Randolph Churchill; but I thought that by thus jumping out of the Gladstonian frying-pan into the Churchillian fire I should not mend matters, so I abstained altogether.

Mr. Parnell has great qualities. For the first time the Irish malcontents have a leader who is not eloquent, but who is honest;

who knows what he wants and faces the risks involved in getting it. Our poor Right Honourable Rhetoricians are no match for this man who understands realities. I believe also that Mr. Parnell's success will destroy the English politicians who permit themselves to be his instruments, as soon as bitter experience of the consequences has brought Englishmen and Scotchmen (and I will add Irishmen) to their senses.

I suppose one ought not to be sorry for that result, but there are men among them over whose fall all will lament.—I am, yours very faithfully, T. H. HUXLEY.

Some of the newspapers took these concluding paragraphs to imply support of Parnell, so that at the end of June he writes :—

The *Tribune* man seems to have less intelligence than might be expected. I spoke approvingly of the way in which Parnell had carried out his policy, which is rather different from approving the policy itself.

But these newspaper scribes don't take the trouble to understand what they read.

While at Bournemouth he also finished and sent off to the *Youth's Companion*, an American paper, an article on the evolution of certain types of the house, called "From the Hut to the Pantheon." Beginning with a description of the Pantheon, that characteristically Roman work with its vast dome, so strongly built that it is the only great dome remaining without a flaw :—

For a long time (he says) I was perplexed to know what it was about the proportions of the interior of the Pantheon which gave me such a different feeling from that made by any other domed space I had ever entered.

The secret of this he finds in the broad and simple design peculiar to the building, and then shows in detail how the round hut, the Ædes Vestæ, and the Pantheon are so many stages in a process of architectural evolution which was effected between the first beginnings of Roman history and the Augustan age.

The relation between the beehive hut, the *terremare*, and the pile-dwellings of Italy lead to many suggestive bits of early anthropology, which, it may be hoped, bore fruit in the minds of some of his youthful readers.

We find him also reading over proofs for Mr. Herbert Spencer, who, although he might hesitate to ask for his criticism with respect to a subject on which they had a "standing difference," still

concluded that to break through the long-standing usage, in pursuance of which I have habitually submitted my biological writing to your castigation, and so often profited by so doing, would seem like a distrust of your candour—a distrust which I cannot entertain.

So he wrote in January; and on March 19 he wrote again, with another set of proofs—

Toujours l'audace! More proofs to look over. Don't write a critical essay, only marginal notes. Perhaps you will say, like the Roman poet to the poetaster who asked him to erase any passages he did not like, and who replied, "One erasure will suffice"—perhaps you will say, "There needs only one marginal note."

To this he received answer:—

CASALINI, W. BOURNEMOUTH,
March 22, 1886.

MY DEAR SPENCER—More power to your elbow! You will find my blessing at the end of the proof.

But please look very carefully at some comments which are not merely sceptical criticisms, but deal with matters of fact.

I see the difference between us on the speculative question lies in the conception of the primitive protoplasm. I conceive it as a mechanism set going by heat—as a sort of active crystal with the capacity of giving rise to a great number of pseudomorphs; and I conceive that external conditions favour one or the other pseudomorph, but leave the fundamental mechanism untouched.

You appear to me to suppose that external conditions modify the machinery, as if by transferring a flour-mill into a forest you could make it into a saw-mill. I am too much of a sceptic to deny the possibility of anything—especially as I am now so much occupied with theology—but I don't see my way to your conclusion.

And that is all the more reason why I don't want to stop you from working it out, or rather to make the "one erasure" you suggest. For as to stopping you, "ten on me might," as the navvy said to the little special constable who threatened to take him into custody.—Ever yours very faithfully, T. H. HUXLEY.

Warmth and sea-fogs here for a variety.

One more letter may be given from this time at Bourne-

mouth—a letter to his eldest daughter on the loss of her infant son :—

CASALINI, W. BOURNEMOUTH,
March 2, 1886.

It's very sad to lose your child just when he was beginning to bind himself to you, and I don't know that it is much consolation to reflect that the longer he had wound himself up in your heart-strings the worse the tear would have been, which seems to have been inevitable sooner or later. One does not weigh and measure these things while grief is fresh, and in my experience a deep plunge into the waters of sorrow is the hopefullest way of getting through them on to one's daily road of life again. No one can help another very much in these crises of life; but love and sympathy count for something, and you know, dear child, that you have these in fullest measure from us.

On coming up to London in April he was very busy, among other things, with a proposal that the Marine Biological Association, of which he was President, should urge the Government to appoint a scientific adviser to the Fishery Board. A letter of his on this subject had appeared in the *Times* for March 30. There seemed to him, with his practical experience of official work, insuperable objections to the status of such an officer. Above all, he would be a representative of science in name, without any responsibility to the body of scientific men in the country. Some of his younger colleagues on the Council, who had not enjoyed the same experience, thought that he had set aside their expressions of opinion too brusquely, and begged Sir M. Foster, as at once a close friend of his, and one to whose opinion he paid great respect, to make representations to him on their behalf, which he did in writing, being kept at home by a cold. To this letter, in which his friend begged him not to be vexed at a very plain statement of the other point of view, but to make it possible for the younger men to continue to follow his lead, he replied :—

4 MARLBOROUGH PLACE,
April 5, 1886.

MY DEAR FOSTER—Mrs. Foster is quite right in looking sharp after your colds, which is very generous of me to say, as I am down in the mouth and should have been cheered by a chat.

I am very glad to know what our younger friends are thinking

about. I made up my mind to some such result of the action I have thought it necessary to take. But I have no ambition to lead, and no desire to drive them, and if we can't agree, the best way will be to go our ways separately. . . .

Heaven forbid that I should restrain anybody from expressing any opinion in the world. But it is so obvious to me that not one of our friends has the smallest notion of what administration in fishery questions means, or of the danger of creating a scientific Frankenstein in that which he is clamouring for, that I suppose I have been over-anxious to prevent mischief, and seemed domineering.

Well, I shall mend my ways. I must be getting to be an old savage if you think it risky to write anything to me.—Ever yours,

T. H. HUXLEY.

But he did not stay long in London. By April 20 he was off to Ilkley, where he expected to stay "for a week or two, perhaps longer." On the 24th he writes to Sir M. Foster:—

I was beginning to get wrong before we left Bournemouth, and went steadily down after our return to London, so that I had to call in a very shrewd fellow who attends my daughter M——. Last Monday he told me that more physicking was no good, and that I had better be off here, and see what exercise and the fresh air of the moors would do for me. So here I came, and mean to give the place a fair trial.

I do a minimum of ten miles per diem without fatigue, and as I eat, drink, and sleep well, there ought to be nothing the matter with me. Why, under these circumstances, I should never feel honestly cheerful, or know any other desire than that of running away and hiding myself, I don't know. No explanation is to be found even in Foster's *Physiology!* The only thing my demon can't stand is sharp walking, and I will give him a dose of that remedy when once I get into trim.

Indeed he was so much better even after a single day at Ilkley, that he writes home:—

It really seems to me that I am an impostor for running away, and I can hardly believe that I felt so ill and miserable four-and-twenty hours ago.

And on the 28th he writes to Sir M. Foster:—

I have been improving wonderfully in the last few days. Yesterday I walked to Bolton Abbey, the Strid, etc., and back, which is a

matter of sixteen miles, without being particularly tired, though the afternoon sun was as hot as midsummer.

It is the old story—a case of candle-snuff—some infernal compound that won't get burnt up without more oxygenation than is to be had under ordinary conditions. . . .

I want to be back and doing something, and yet have a notion that I should be wiser if I stopped here a few weeks and burnt up my rubbish effectually. A good deal will depend upon whether I can get my wife to join me or not. She has had a world of worry lately.

As to his fortunate choice of an hotel, "I made up my mind," he writes, "to come to this hotel merely because Bradshaw said it was on the edge of the moor—but for once acting on an advertisement turned out well." The moor ran up six or seven hundred feet just outside the garden, and the hotel itself was well outside and above the town and the crowd of visitors. Here, with the exception of a day or two in May and a fortnight at the beginning of June, he stayed till July, living as far as possible an outdoor life, and getting through a fair amount of correspondence.

It was not to be expected that he should long remain unknown, and he was sometimes touched, more often bored, by the forms which this recognition took. Thus two days after his arrival he writes home :—

Sitting opposite to me at the *table d'hôte* here is a nice old Scotch lady. People have found out my name here by this time, and yesterday she introduced herself to me, and expressed great gratitude for the advice I gave to a son of hers two or three years ago. I had great difficulty in recollecting anything at all about the matter, but it seems the youngster wanted to go to Africa, and I advised him not to, at anyrate at present. However, the poor fellow went, and died, and they seem to have found a minute account of his interview with me in his diary.

But all were not of this kind. On the 26th he writes :—

I took a three hours' walk over the moors this morning with nothing but grouse and peewits for company, and it was perfectly delicious. I am beginning to forget that I have a liver, and even feel mildly disposed to the two fools of women between whom I have to sit every meal.

27th.—. . . . I wish you would come here if only for a few days—it would do you a world of good after your anxiety and wear and tear for the last week. And you say you are feeling weak. Please come and let me take care of you a bit; I am sure the lovely air here would set you up. I feel better than I have for months. . . .

The country is lovely, and in a few days more all the leaves will be out. You can almost hear them bursting. Now come down on Saturday and rejoice the "sair een" of your old husband who is wearying for you.

Another extract from the same correspondence expresses his detestation for a gross breach of confidence :—

April 22.—. . . I have given Mr. —— a pretty smart setting down for sending me Ruskin's letter to him! It really is iniquitous that such things should be done. Ruskin has a right to say anything he likes in a private letter, and —— must be a perfect cad to send it on to me.

The following letter on the ideal of a Paleontological Museum is a specialised and improved version of his earlier schemes on the same subject :—

4 MARLBOROUGH PLACE,
May 3, 1886.

MY DEAR FOSTER—I cannot find Hughes' letter, and fancy I must have destroyed it. So I cannot satisfy Newton as to the exact terms of his question.

But I am quite clear that my answer was not meant to recommend any particular course for Cambridge, when I know nothing about the particular circumstances of the case, but referred to what I should like to do if I had *carte blanche.*

It is as plain as the nose on one's face (mine is said to be very plain) that Zoological and Botanical collections should illustrate (1) Morphology, (2) Geographical Distribution, (3) Geological Succession.

It is also obvious to me that the morphological series ought to contain examples of all the extinct types in their proper places. But I think it will be no less plain to any one who has had anything to do with Geology and Paleontology that the great mass of fossils is to be most conveniently arranged stratigraphically. The Jermyn St. Museum affords an example of the stratigraphical arrangement.

I do not know that there is anywhere a collection arranged according to Provinces of Geographical Distribution. It would be a great credit to Cambridge to set the example of having one.

If I had a free hand in Cambridge or anywhere else I should build (A) a Museum, open to the public, and containing three strictly limited and selected collections; one morphologically, one geographically, and one stratigraphically arranged; and (B) a series of annexes arranged for storage and working purposes to contain the material which is of no use to any but specialists. I am convinced that this is the only plan by which the wants of ordinary people can be supplied efficiently, while ample room is afforded for additions to any extent without large expense in building.

On the present plan or no plan, Museums are built at great cost, and in a few years are choked for want of room.

If you have the opportunity, I wish you would explain that I gave no opinion as to what might or might not be expedient under present circumstances at Cambridge. I do not want to seem meddlesome.—Ever yours very faithfully, T. H. HUXLEY.

Don't forget Cayley.

N.B.—As my meaning seems to have been misunderstood I wish, if you have the chance, you would make it clear that I do not want three brick and mortar museums—but one public museum—containing a threefold collection of typical forms, a biological Trinity in Unity in fact.

It might conciliate the clerics if you adopted this illustration. But as *your own*, mind. I should not like them to think me capable of it.

However, even Ilkley was not an infallible cure. Thus he writes to Sir M. Foster:—

May 17.—I am ashamed of myself for not going to town to attend the Gov. Grant Committee and Council, but I find I had better stop here till the end of the month, when I must return for a while anyhow.

I have improved very much here, and so long as I take heaps of exercise every day I have nothing to complain of beyond a fit of blue devils when I wake in the morning.

But I don't want to do any manner of work, still less any manner of play, such as is going on in London at this time of year, and I think I am wise to keep out of it as long as I can.

I wish I knew what is the matter with me. I feel always just on the verge of becoming an absurd old hypochondriac, and as if it only wanted a touch to send me over.

May 27.—. . . . The blue devils worry me far less than they did. If there were any herd of swine here I might cast them out altogether, but I expect they would not go into blackfaced sheep.

I am disposed to stop not more than ten days in London, but to come back here and bring some work with me. In fact I do not

know that I should return yet if it were not that I do not wish to miss our usual visit to Balliol, and that my Spanish daughter is coming home for a few months. . . .

I am overwhelmed at being taken at my word about scientific federation.[1] "Something will transpire" as old Gutzlaff[2] said when he flogged plaintiff, defendant and witnesses in an obscure case.

P.S.—I have had an invitation from —— to sign "without committing myself to details" an approbation of his grand scheme.[3] A stupendous array of names appear thus committed to the "principle of the Bill." I prefer to be the Hartington of the situation.

During this first stay in London he wrote twice to Mr. Herbert Spencer, from whom he had, according to custom, received some proofs to read. The first set were from his autobiography; after twice reading Huxley had merely marked a couple of paragraphs containing personal references which might possibly be objectionable "to the 'heirs, administrators and assigns,' if there are any, or to the people themselves if they are living still." He continues, June 1:—

You will be quite taken aback at getting a proof from me with so few criticisms, but even I am not so perverse as to think that I can improve your own story of your own life!

I notice a curious thing. If Ransom[4] had not overworked himself, I should probably not be writing this letter.

For if he had worked less hard I might have been first and he second at the Examination at the University of London in 1845. In which case I should have obtained the Exhibition, should not have gone into the navy, and should have forsaken science for practice. . . .

Again on June 4:—

MY DEAR SPENCER—Here's a screed for you! I wish you well through it.

Mind, I have no *a priori* objection to the transmission of functional modifications whatever. In fact, as I told you, I should rather like it to be true.

But I argued against the assumption (with Darwin as I do with

[1] *i.e.* a federation between the Royal Society and scientific societies in the colonies.

[2] This worthy appears to have been an admiral on the China station about 1840.

[3] For the reorganisation of the Fisheries Department.

[4] Dr. Ransom of Nottingham.

you) of the operation of a factor which, if you will forgive me for saying so, seems as far off support by trustworthy evidence now as ever it was.—Ever yours very faithfully, T. H. HUXLEY.

On the same day he wrote to Mr., afterwards Sir John, Skelton :—

4 MARLBOROUGH PLACE, LONDON, N.W.,
June 4, 1886.

MY DEAR SKELTON—A civil question deserves a civil answer—Yes. I am sorry to say I know—nobody better—"what it is to be unfit for work." I have been trying to emerge from that condition, first at Bournemouth, and then at Ilkley, for the last five months, with such small success that I find a few days in London knocks me up, and I go back to the Yorkshire moors next week.

We have no water-hens there—nothing but peewits, larks, and occasional grouse—but the air and water are of the best, and the hills quite high enough to bring one's muscles into play.

I suppose that Nebuchadnezzar was quite happy so long as he grazed and kept clear of Babylon; if so, I can hold him for my Scripture parallel.

I wish I could accept your moral No. 2, but there is amazingly little evidence of "reverential care for unoffending creation" in the arrangements of nature, that I can discover. If our ears were sharp enough to hear all the cries of pain that are uttered in the earth by men and beasts, we should be deafened by one continuous scream!

And yet the wealth of superfluous loveliness in the world condemns pessimism. It is a hopeless riddle.—Ever yours,

T. H. HUXLEY.

Please remember me to Mrs. Skelton.

The election of a new Headmaster at Eton, where he was a member of the Governing Body, was a matter of no small concern to him at this moment. Some parts of the existing system seemed impossible to alter, though a reform in the actual scheme and scope of teaching seemed to him both possible and necessary for the future well-being of the school. He writes to his eldest son on July 6, 1886:—

The whole system of paying the Eton masters by the profits of the boarding-houses they keep is detestable to my mind, but any attempt to alter it would be fatal.

. . . I look to the new appointment with great anxiety. It will make or mar Eton. If the new Headmaster has the capacity to grasp the fact that the world has altered a good deal since the Eton system was invented, and if he has the sense to adapt Eton to the

new state of things, without letting go that which was good in the old system, Eton may become the finest public school in the country.

If on the contrary he is merely a vigorous representative of the old system pure and simple, the school will go to the dogs.

I think it is not unlikely that there may be a battle in the Governing Body over the business, and that I shall be on the losing side. But I am used to that, and shall do what I think right nevertheless.

The same letter contains his reply to a suggestion that he should join a society whose object was to prevent a railway from being run right through the Lake district.

I am not much inclined to join the "Lake District Defence Sociey." I value natural beauty as much as most people—indeed I value it so much, and think so highly of its influence that I would make beautiful scenery accessible to all the world, if I could. If any engineering or mining work is projected, which will really destroy the beauty of the Lakes, I will certainly oppose it, but I am not disposed, as Goschen said, to "give a blank cheque" to a Defence Society, the force of which is pretty certain to be wielded by the most irrational fanatics among its members.

Only the other day I walked the whole length of Bassenthwaite from Keswick and back, and I cannot say that the little line of rails which runs along the lake, now coming into view and now disappearing, interfered with my keen enjoyment of the beauty of the lake any more than the macadamised road did. And if it had not been for that railway I should not have been able to make Keswick my headquarters, and I should have lost my day's delight.

People's sense of beauty should be more robust. I have had apocalyptic visions looking down Oxford Street at a sunset before now.—Ever, dear lad, your loving father, T. H. HUXLEY.

After this he took his wife to Harrogate, "just like Clapham Common on a great scale," where she was ordered to drink the waters. For himself, it was as good as Ilkley, seeing that he needed "nothing but fresh air and exercise, and just as much work that interests me as will keep my mind from getting 'blue mouldy.'" The work in this case was the chapter in the Life of Charles Darwin, which he had promised Mr. F. Darwin to finish before going abroad.

On July 10, he writes to Sir M. Foster on the rejection of the Home Rule Bill :—

The smashing of the G.O.M. appears to be pretty complete, though he has unfortunately enough left to give him the means of playing an ugly game of obstruction in the next Parliament.

You have taken the shine out of my exultation at Lubbock's majority—though I confess I was disheartened to see so many educated men going in for the disruption policy. If it were not for Randolph I should turn Tory, but that fellow will some day oust Salisbury as Dizzy ousted old Derby, and sell his party to Parnell or anybody else who makes a good bid.

We are flourishing on the whole. Sulphide of wife joins with me in love.—Ever yours, T. H. H.

On the 21st he writes:—

The formation of Huxley sulphide will be brought to a sudden termination to-morrow when we return to London. The process has certainly done my wife a great deal of good and I wish it could have gone on a week or two longer, but our old arrangements are upset and we must start with the chicks for Switzerland on the 27th, that is next Tuesday.

CHAPTER IX

1886

THE earlier start was decided upon for the sake of one of his daughters, who had been ill. He went first to Evolena, but the place did not suit him, and four days after his arrival went on to Arolla, whence he writes on August 3 :—

> We reached Evolena on Thursday last. . . . We had glorious weather Thursday and Friday, and the latter day (having both been told carefully to avoid over-exertion), the wife and I strolled, quite unintentionally, as far as the Glacier de Ferpècle and back again. Luckily the wife is none the worse, and indeed, I think I was the more tired of the two. But we saw at once that Evolena was a mistake for our purpose, and were confirmed in that opinion by a deluge of rain on Saturday. The hotel is down in a hole at the tail of a dirty Swiss village, and only redeemed by very good cooking. So, Sunday being fine, I, E. and H. started up here to prospect, 18 miles up and down, and 2000 feet to climb, and did it beautifully. It is just the place for us, at the tail of a glacier in the midst of a splendid amphitheatre of 11–12000 feet snow heights, and yet not bare and waste, any quantity of stone-pines growing about. . . . I rather long for the flesh-pots of Evolena—cooking here being decidedly rudimentary—otherwise we are very well off.

The keen air of six thousand feet above sea level worked wonders with the invalids. The lassitude of the last two years was swept away, and Huxley came home eager for active life. Here too it was that, for occupation, he took up the study of gentians; the beginning of that love of his garden which was so great a delight to him in his last years. On his return home he writes :—

4 MARLBOROUGH PLACE,
Sept. 10, 1886.

MY DEAR FOSTER—We got back last evening after a very successful trip. Arolla suited us all to a T, and we are all in great force. As for me, I have not known of the existence of my liver, and except for the fact that I found fifteen or sixteen miles with a couple of thousand feet up and down quite enough, I could have deluded myself into the fond imagination that I was twenty years younger.

By way of amusement I bought a Swiss Flora in Lausanne and took to botanising—and my devotion to the gentians led the Bishop of Chichester—a dear old man, who paid us (that is the hotel) a visit—to declare that I sought the "Ur-gentian" as a kind of Holy Grail. The only interruption to our felicity was the death of a poor fellow, who was brought down on a guide's back from an expedition he ought not to have undertaken, and whom I did my best to keep alive one night. But rapid pleuritic effusion finished him the next morning, in spite of (I hope not in consequence of) such medical treatment as I could give him.

I see you had a great meeting at Birmingham, but I know not details. The delegation to Sydney is not a bad idea, but why on earth have they arranged that it shall arrive in the middle of the hot weather? Speechifying with the thermometer at 90° in the shade will try the nerves of the delegates, I can tell them.

I shall remain quietly here and see whether I can stand London. I hope I may, for the oestrus of work is upon me—for the first time this couple of years. Let me have some news of you. With our love to your wife and you—Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE, N.W.,
Sept. 14, 1886.

MY DEAR DONNELLY—I hear that some of your alguazils were looking after me yesterday, so I had better give myself up at once—hoping it will be considered in the sentence.

The fact is I have been going to write to you ever since we came back last Thursday evening, but I had about fifty other letters to write and got sick of the operation.

We are all in great force, and as for me, I never expected a year ago to be as well as I am. I require to look in the glass and study the crows' feet and the increasing snow cap on the summit of my Tête noire (as it once was), to convince myself I am not twenty years younger.

How long it will last I don't feel sure, but I am going to give London as little chance as possible.

I trust you have all been thriving to a like extent. Scott[1] wrote to me the other day wanting to take his advanced flock (2—one, I believe, a ewe-lamb) to Kew. I told him I had no objection, but he had better consult you.

I have not been to S.K. yet—as I have a devil (botanical—) and must satisfy him before doing anything else. It's the greatest sign of amendment that I have gone in for science afresh. When I am ill (and consequently venomous), nothing satisfies me but gnawing at theology; it's a sort of crib-biting.

Our love to Mrs. Donnelly. I suppose G.H.[2] is by this time a kind of Daniel Lambert physically and Solomon mentally—my blessing to him.—Ever yours very faithfully, T. H. HUXLEY.

As a sequel to the sad event mentioned in the former letter, the relations of the young man who had died so suddenly at Arolla wished to offer Huxley some gift in grateful recognition of the kindness he had shown to the poor fellow; but being unable to fix upon any suitable object, begged him to accept a considerable sum of money and expend it on any object he pleased as a memento. To this he replied, November 21, 1886:—

I am very much obliged for the kindly recognition of my unfortunately unavailing efforts to be of service to your brother-in-law which is contained in your letter.

But I and those who right willingly helped me did nothing more than our plain duty in such a case; and though I fully appreciate the motives which actuate Mrs.—— and yourself and friends, and would gladly accept any trifle as a memento of my poor friend (I call him so, for we really struck up a great friendship in our twelve hours' acquaintance), I could not with any comfort use the very handsome cheque you offer.

Let me propose a compromise. As you will see by the enclosed paper, a colleague of mine has just died leaving widow and children in very poor circumstances. Contribute something to the fund which is being raised for their benefit, and I shall consider it as the most agreeable present you could possibly make to me.

And if you wish me to have a personal memento of our friend, send me a pipe that belonged to him. I am greatly devoted to tobacco, and will put it in a place of honour in my battery of pipes.

The bracing effects of Arolla enabled him to stay two months in town before again retiring to Ilkley to be

[1] Assistant Professor of Botany at the Royal College of Science.
[2] Gordon Huxley Donnelly, Sir John's son.

"screwed up." He had on the stocks his Gentian Paper and the chapter for the Darwin Life, besides the chapter on the Progress of Science for the *Reign of Victoria*, all of which he finished off this autumn; he was busy with Technical Education, and the Egyptian borings which were being carried out under the superintendence of the Royal Society. Finally he was induced by a "diabolical plot" on the part of Mr. Spencer to read, and in consequence to answer, an article in the *Fortnightly* for November by Mr. Lilly on "Materialism and Morality." These are the chief points with which the following correspondence is concerned.

4 MARLBOROUGH PLACE,
Sept. 16, 1886.

MY DEAR FOSTER—I enclose the Report[1] and have nothing to suggest except a quibble at p. 4. If you take a stick in your hand you may feel lots of things and determine their form, etc., with the other end of it, but surely the stick is properly said to be insensible. D°. with the teeth. I feel very well with mine (which are paid for) but they are surely not sensible? Old Tomes once published the opinion that the contents of the dentine tubules were sensory nerves, on the ground of our feeling so distinctly through our teeth. He forgot the blind man's stick. Indeed the reference of sensation to the end of a stick is one of the most interesting of psychological facts.

It is extraordinary how those dogs of examinees return to their vomit. Almost all the obstinate fictions you mention are of a quarter of a century date. Only then they were dominant and epidemic—now they are sporadic.

I wish Pasteur or somebody would find some microbe with which the rising generation could be protected against them.

We shall have to re-arrange the Examination business—this partner having made his fortune and retiring from [illegible]. Think over what is to be done.—Ever yours, T. H. H.

You don't happen to grow gentians in your Alpine region, do you?

Of his formal responsibility for the examinations he had written earlier in the year:—

[1] The Annual Report of the Examiners in Physiology under the Science and Art Department, which, being still an Examiner, he had to sign.

WELLS HOUSE, ILKLEY,
June 15, 1886.

MY DEAR DONNELLY—I think it is just as well that you could not lay your hands on ink, for if you had you would only have blacked them. (*N.B.* This is a goak.)

You know we resolved that it was as well that I should go on as Examiner (unpaid) this year. But I rather repent me of it—for although I could be of use over the questions, I have had nothing to do with checking the results of the Examination except in honours, and I suspect that Foster's young Cambridge allies tend always to screw the standard up.

I am inclined to think that I had much better be out of it next year. The attempt to look over examination papers now would reduce the little brains I have left to mere pulp—and, on the other hand, if there is any row about results, it is not desirable that I should have to say that I have not seen the answers.

When I go you will probably get seven devils worse than the first—but that is not the fault of the first devil.

I am picking up here wonderfully in spite of the bad weather. It rained hard yesterday and blew ditto—to-day it is blowing dittoes—but there is sunshine between the rain and squalls.

I hope you are better off. What an outlandish name "Tetronila." I don't believe you have spelt it right. With best regards to Mrs. Donnelly and my godson.—Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Sept. 16, 1886.

MY DEAR HOOKER—I have sucked Grisebach's brains, looked up *Flora B. Americana*, and *F. Antarctica and New Zealand*, and picked about in other quarters. I found I knew as much as Grisebach had to tell me (and more) about *lutea*, *purpureo-punctata*, *acaulis*, *campestris*, and the *verna* lot, which are all I got hold of at Arolla. But he is very good in all but classification, which is logically "without form and void, and darkness on the face of it."

I shall have to verify lots of statements about gentians I have not seen, but at present the general results are very curious and interesting. The species fall into four groups, one *primary* least differentiated—three, specialised.

1. Lobes of corolla fringed. 2. Coronate. 3. Interlobate (*i.e.* not the "plica" between the proper petals).

Now the interesting point is that the Antarctic species are all primary and so are the great majority of the Andean forms. *Lutea* is the only old-world primary, unless the Himalayan *Moorcroftiana* belongs here. The Arctic forms are also primary, but the petals more extensively united.

The specialised types are all Arctogeal with the exception of half a dozen or so Andean species including *prostrata*.

There is a strange general parallelism with the cray-fishes! which also have their primary forms in Australia and New Zealand, avoid E. S. America and Africa, and become most differentiated in Arctogæa. But there are also differences in detail.

It strikes me that this is uncommonly interesting; but, of course, all the information about the structure of the flowers, etc., I get at second hand, wants verifying.

Have you done the gentians of your *Flora Indica* yet? Do look at them from this point of view.

I cannot make out what Grisebach means by his division of Chondrophylla. What is a "cartilaginous" margin to a leaf?—"Folia margine *cartilaginea!*" He has a lot of Indian sp. under this head.

I send you a rough scheme I have drawn up. Please let me have it back. Any annotations thankfully received. Shan't apologise for bothering you.

I hope the pension is settled at last.—Ever yours,

T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Sept. 22, 1886.

MY DEAR HOOKER—I have written to Lubbock a long screed stating my views[1] with unmistakable distinctness as politeful as may be, and asking him, if he thought well, to send them on to whomsoever it may concern. As old Gutzlaff[2] used to say when he wanted to get evidence from a Chinee—"Gif him four dozen, someting vill transpire." At any rate the Chinee transpired, and I hope some official will.

Here beginneth more gentian craze.

I have not examined *Moorcroft.* yet, but if the figure in Roxb. is trustworthy it's a primary and no mistake. I can't understand your admitting *Amarellae* without coronae. The presence of a corona is part of the definition of the *amarella* group, and an *amarella* without a corona is a primary *ipso facto*.

Taking the facts as I have got them in the rough, and subject to minor verifications, the contrast between the Andean, Himalayan, and Caucasian Gentian Florae is very striking.

	Simplices.	Ciliatae.	Coronatae.	Interlobatae.
Andes	27	0 (?)	15	2
Himalayas	1 (*Moorcroft.*)	0	4	32
Caucasus Pyrenees (all one)	2 (*lutea* . *umbellata*)	2	5	21

[1] Referring to the relations between the S. K. department and the City and Guilds Committee on Technical Education.

[2] See p. 133.

I don't think *Ciliatae* worth anything as a division. I took it as it stood.

It is clear that migration helps nothing, as between the old-world and S. American Florae. It is the case of the Tapirs (Andean and Sino-Malayan) over again. Relics of a tertiary Flora which once extended from S. America to Eurasia through N. America (by the west, probably).

I see a book by Engler on the development of Floras since tertiary epoch. Probably the beggar has the idea.—Ever yours,

T. H. HUXLEY.

GODALMING, *Sept.* 25, 1886.

MY DEAR FOSTER—We are here till to-morrow on a visit to Leonard, seeing how the young folks keep house.

I brought the Egyptian report down with me. It is very important, and in itself justifies the expenditure. Any day next (that is to say this) week that you like I can see Col. Turner. If you and Evans can arrange a day I don't think we need mind the rest of the Committee. We must get at least two other borings ten or fifteen miles off, if possible on the same parallel, by hook or by crook. It will tell us more about the Nile valley than has ever been known. That Italian fellow who published sections must have lied considerably.

Touching gentians, I have not examined your specimen yet, but it certainly did not look like *Andrewsii*. You talk of having *acaulis* in your garden. That is one of the species I worked out most carefully at Arolla, but its flowering time was almost over, and I only got two full-blown specimens to work at. If you have any in flower and don't mind sacrificing one with a bit of the rhizoma, and would put it in spirit for me, I could settle one or two points still wanting. Whisky will do, and you will be all the better for not drinking the whisky!

The distributional facts, when you work them in connection with morphology, are lovely. We put up with Donnelly on our way here. He has taken a cottage at Felday, eleven miles from hence, in lovely country—on lease. I shall have to set up a country residence some day, but as all my friends declare their own locality best, I find a decision hard. And it is a bore to be tied to one place.—Ever yours,

T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Oct. 20, 1886.

MY DEAR HOOKER—I wish you would not mind the trouble of looking through the enclosed chapter which I have written at F. Darwin's request, and tell me what you think of it. F. D. thinks I

am hard upon the "Quarterly Article," but I read it afresh and it is absolutely scandalous. The anonymous vilifiers of the present day will be none the worse for being reminded that they may yet hang in chains. I expect, from all I hear, that Gosse has had very hard measure, and you may see that Cotter Morison (who is a very good authority) says that the Reviewer is quite wrong about the Harrington business, of which he makes so much.

It occurs to me that it might be well to add a paragraph or two about the two chief objections made formerly and now to Darwin, the one, that it is introducing "chance" as a factor in nature, and the other that it is atheistic.

Both assertions are utter bosh. None but parsons believe in "chance"; and the philosophical difficulties of Theism now are neither greater nor less than they have been ever since Theism was invented.—Ever yours, T. H. H.

Old experience, indeed, made him sympathise so much with Mr. Edmund Gosse for his treatment in a celebrated literary controversy, that he wrote him the following letter:—

Oct. 22, 1886.

DEAR SIR—I beg leave to offer you my best thanks for your letter to the *Athenæum*, which I have just read, and to congratulate you on the force and completeness of your answer to your assailant.

It is rarely worth while to notice criticism, but when a good chance of exposing one of these anonymous libellers who disgrace literature occurs, it is a public duty to avail oneself of it.

Oddly enough, I have recently been performing a similar "haute œuvre." The most violent, base, and ignorant of all the attacks on Darwin at the time of the publication of the "Origin of Species" appeared in the *Quarterly Review* of that time; and I have built the reviewer a gibbet as high as Haman's.

All good men and true should combine to stop this system of literary moonlighting.—I am yours very faithfully,

T. H. HUXLEY.

As for the incitement to answer Mr. Lilly, Mr. Spencer writes from Brighton on November 3:—

I have no doubt your combative instincts have been stirred within you as you read Mr. Lilly's article, "Materialism and Morality," in which you and I are dealt with after the ordinary fashion popular with the theologians, who practically say, "You *shall* be materialists whether you like it or not." I should not be sorry if you yielded to those promptings of your combative instinct.

Now that you are a man of leisure there is no reason why you should not undertake any amount of fighting, providing always that you can find foemen worthy of your steel. . . .

I remember that last year you found intellectual warfare good for your health, so I have no qualms of conscience in making the suggestion.

To this he replies on the 7th :—

Your stimulation of my combative instincts is downright wicked. I will not look at the *Fortnightly* article lest I succumb to temptation. At least not yet. The truth is that these cursed irons of mine, that have always given me so much trouble, will put themselves in the fire, when I am not thinking about them. There are three or four already.

On November 21 Mr. Spencer sends him more proofs of his autobiography, dealing with his early life :—

See what it is to be known as an omnivorous reader—you get no mercy shown you. A man who is ready for anything, from a fairy tale to a volume of metaphysics, is naturally one who will make nothing of a fragment of a friend's autobiography !

To this he replies on the 25th :—

4 MARLBOROUGH PLACE,
Nov. 25, 1886.

MY DEAR SPENCER—In spite of all prohibition I must write to you about two things. First, as to the proof returned herewith—I really have no criticisms to make (miracles, after all, may not be incredible). I have read your account of your boyhood with great interest, and I find nothing there which does not contribute to the understanding of the man. No doubt about the truth of evolution in your own case.

Another point which has interested me immensely is the curious similarity to many recollections of my own boyish nature which I find, especially in the matter of demanding a reason for things and having no respect for authority.

But I was more docile, and could remember anything I had a mind to learn, whether it was rational or irrational, only in the latter case I hadn't the mind.

But you were infinitely better off than I in the matter of education. I had two years of a Pandemonium of a school (between 8 and 10) and after that neither help nor sympathy in any intellectual direction till I reached manhood. Good heavens ! if I had had a father and uncle who troubled themselves about my education as

yours did about your training, I might say as Bethell said of his possibilities had he come under Jowett, "There is no knowing to what eminence I might not have attained." Your account of them gives me the impression that they were remarkable persons. Men of that force of character, if they had been less wise and self-restrained, would have played the deuce with the abnormal chicken hatched among them.

The second matter is that your diabolical plot against Lilly has succeeded—*vide* the next number of the *Fortnightly*.[1] I was fool enough to read his article, and the rest followed. But I do not think I should have troubled myself if the opportunity had not been good for clearing off a lot of old scores.

The bad weather for the last ten days has shown me that I want screwing up, and I am off to Ilkley on Saturday for a week or two. Ilkley Wells House will be my address. I should like to know that you are picking up again.—Ever yours very faithfully,

T. H. HUXLEY.

And again on December 13 :—

I am very glad to have news of you which on the whole is not unsatisfactory. Your conclusion as to the doctors is one I don't mind telling you in confidence I arrived at some time ago. . . .

I am glad you liked my treatment of Mr. Lilly. . . . I quite agree with you that the thing was worth doing for the sake of the public.

I have in hand another bottle of the same vintage about Modern Realism and the abuse of the word Law, suggested by a report I read the other day of one of Liddon's sermons.[2]

The nonsense these great divines talk when they venture to meddle with science is really appalling.

Don't be alarmed about the history of Victorian science.[3] I am happily limited to the length of a review article or thereabouts, and it is (I am happy to say it is nearly done) more of an essay on the history of science, bringing out the broad features of the contrast between past and present, than the history itself. It seemed to me that this was the only way of dealing with such a subject in a book intended for the general public.

The article "Science and Morals" was not only a satisfaction to himself, but a success with the readers of the *Fortnightly*. To his wife he writes :—

December 2.—Have you had the *Fortnightly?* How does my painting of the Lilly look?

[1] Science and Morals, *Coll. Ess.* ix. 117.

[2] "Pseudo-Scientific Realism," *Coll. Ess.* iv. 59.

[3] See p. 140.

December 8.—Harris . . . says that my article "simply made the December number," which pretty piece of gratitude means a lively sense of favours to come.

December 13.—I had a letter from Spencer yesterday chuckling over the success of his setting me on Lilly.

Ilkley had a wonderful effect upon him. "It is quite absurd," he writes after 24 hours there, "but I am wonderfully better already." His regimen was of the simplest, save perhaps on one point. "Clark told me," he says with the utmost gravity, "always to drink tea and eat hot cake at 4.30. I have persevered, however against my will, and last night had no dreams, but slept like a top." Two hours' writing in the morning were followed by two hours' sharp walking; in the afternoon he first took two hours' walking or strolling if the weather were decent; "then Clark's prescription diligently taken" (*i.e.* tea and a pipe) and a couple of hours more writing; after dinner reading and to bed before eleven.

I am working away (he writes) in a leisurely comfortable manner at my chapter for Ward's Jubilee book, and have got the first few pages done, which is always my greatest trouble.

December 8.—. . . Canon Milman wrote to me to come to the opening of the New Buildings for Sion College, which the Prince is going to preside over on the 15th. I had half a mind to accept, if only for the drollery of finding myself among a solemn convocation of the city clergy. However, I thought it would be opening the floodgates, and I prudently declined.

One more letter may perhaps be quoted as illustrating the clearness of vision in administrative matters which made it impossible for him to sit quietly by and see a tactical blunder being committed, even though his formal position might not seem to warrant his interference. This is his *apologia* for such a step.

Dec. 16, 1886.

MY DEAR FOSTER—On thinking over this morning's Committee work,[1] it strikes my conscience that being neither President or Chairman nor officer I took command of the boat in a way that was hardly justifiable.

But it occurred to me that our sagacious —— for once was

[1] Some Committee of the Royal Society.

going astray and playing into ——'s hands, without clearly seeing what he was doing, and I bethought me of "salus Societatis suprema lex," and made up my mind to stop the muddle we were getting into at all costs. I hope he was not disgusted nor you either. X. ought to have cut in, but he did not seem inclined to do so.

I am clearly convinced it was the right thing to do—anyhow.
—Ever yours, T. H. H.

The chronicle of the year may fitly close with a letter from Ilkley to Dr. Dohrn, *apropos* of his recommendation of a candidate for a biological professorship. The "honest sixpence got by hard labour," refers to a tour in the Highlands which he had once taken with Dr. Dohrn, when, on a rough day, they were being rowed across Loch Leven to Mary Stuart's castle. The boatman, unable to make head single-handed against the wind, asked them each to take an oar; but when they landed and Huxley tendered the fare, the honest fellow gave him back two sixpences, saying, "I canna tak' it: you have wrocht as hard as I." Each took a coin; and Huxley remarked that this was the first sixpence he had earned by manual labour. Dr. Dohrn, I believe, still carries his sixpence in memory of the occasion.

WELLS HOUSE, ILKLEY, YORKSHIRE,
Dec. 1, 1886.

MY DEAR DOHRN—You see by my address that I am *en retraite*, for a time. As good catholics withdraw from the world now and then for the sake of their souls—so I, for the sake of my body (and chiefly of my liver) have retired for a fortnight or so to the Yorkshire moors—the nearest place to London where I can find dry air 1500 feet above the sea, and the sort of uphill exercise which routs out all the unoxygenated crannies of my organism. Hard frost has set in, and I had a walk over the moorland which would have made all the blood of the Ost-see pirates—which I doubt not you have inherited—alive, and cleared off the fumes of that detestable Capua to which you are condemned. I should like to have seen the nose of one [of your Neapolitan nobilissimes after half-an-hour's exposure to the north wind, clear and sharp as a razor, which very likely looked down on Loch Leven a few hours ago.

Ah well! "fuimus"—I am amused at the difficulty you find in taking up the position of a "grave and reverend senior"; because I can by no means accustom myself to the like dignity. In spite of my grey hairs "age hath not cooled the Douglas blood" altogether,

and I have a gratifying sense that (liver permitting) I am still capable of much folly. All this, however, has not much to do with poor Dr. —— to whom, I am sorry to say, your letter could do no good, as it arrived after my colleagues and I had settled the business.

But there were a number of strong candidates who had not much chance. If it is open to me to serve him hereafter, however, your letter will be of use to him, for I know you do not recommend men lightly.

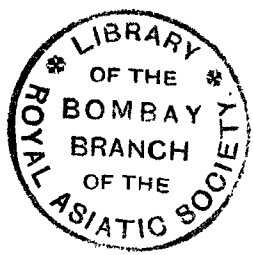
After some eighteen months of misery—the first thing that did me any good was coming here. But I was completely set up by six or seven weeks at Arolla in the Valais. The hotel was 6400 feet up, and the wife and daughters and I spent most of our time in scrambling about the 2000 feet between that and the snow. Six months ago I had made up my mind to be an invalid, but at Arolla I walked as well as I did when you and I made pilgrimages—and earned the only honest sixpence (I, at any rate) ever got for hard labour. Three months in London brought me down again, so I came here to be "mended."

You know English literature so well that perhaps you have read Wordsworth's "White Doe of Rylstone." I am in that country, within walk of Bolton Abbey.

Please remember me very kindly to the Signora—and thank her for copying the letter in such a charmingly legible hand. I wish mine were like it.

If I am alive we shall go to Arolla next summer. Could we not meet there? It is a fair half-way.—Ever yours,

T. H. HUXLEY.



CHAPTER X

1887

THE first half of 1887, like that of the preceding year, was chequered by constant returns of ill-health. "As one gets older," he writes in a New Year's letter to Sir J. Donnelly, "hopes for oneself get more moderate, and I shall be content if next year is no worse than the last. Blessed are the poor in spirit!" The good effects of the visit to Arolla had not outlasted the winter, and from the end of February he was obliged to alternate between London and the Isle of Wight.

Nevertheless, he managed to attend to a good deal of business in the intervals between his periodic flights to the country, for he continued to serve on the Royal Society Council, to do some of the examining work at South Kensington, and to fight for the establishment of adequate Technical Education in England. He attended the Senate and various committees of the London University and of the Marine Biological Association.

Several letters refer to the proposal—it was the Jubilee year—to commemorate the occasion by the establishment of the Imperial Institute. To this he gladly gave his support; not indeed to the merely social side; but in the opportunity of organising the practical applications of science to industry he saw the key to success in the industrial war of the future. Seconding the resolution proposed by Lord Rothschild at the Mansion House meeting on January 12, he spoke of the relation of industry to science—the two great developments of this century. Formerly practical men looked askance at science, "but within the last thirty years,

more particularly," continues the report in *Nature* (vol. xxxiii. p. 265) "that state of things had entirely changed. There began in the first place a slight flirtation between science and industry, and that flirtation had grown into an intimacy, he might almost say courtship, until those who watched the signs of the times saw that it was high time that the young people married and set up an establishment for themselves. This great scheme, from his point of view, was the public and ceremonial marriage of science and industry."

Proceeding to speak of the contrast between militarism and industrialism, he asked whether, after all, modern industry was not war under the forms of peace. The difference was the difference between modern and ancient war, consisting in the use of scientific weapons, of organisation and information. The country, he concluded, had dropped astern in the race for want of special education which was obtained elsewhere by the artisan. The only possible chance for keeping the industry of England at the head of the world was through organisation.

Writing on January 18, to Mr. Herbert Spencer, who had sent him some proofs of his Autobiography to look through, he says:—

I see that your proofs have been in my hands longer than I thought for. But you may have seen that I have been "starring" at the Mansion House.

This was not exactly one of those bits of over-easiness to pressure with which you reproach me—but the resultant of a composition of pressures, one of which was the conviction that the "Institute" might be made into something very useful and greatly wanted—if only the projectors could be made to believe that they had always intended to do that which your humble servant wants done—that is the establishment of a sort of Royal Society for the improvement of industrial knowledge and an industrial university—by voluntary association.

I hope my virtue may be its own reward. For except being knocked up for a day or two by the unwonted effort, I doubt whether there will be any other. The thing has fallen flat as a pancake, and I greatly doubt whether any good will come of it. Except a fine in the shape of a subscription, I hope to escape further punishment for my efforts to be of use.

However, this was only the beginning of his campaign.

On January 27, a letter from him appeared in the *Times*, guarding against a wrong interpretation of his speech, in the general uncertainty as to the intentions of the proposers of the scheme.

I had no intention (he writes) of expressing any enthusiasm on behalf of the establishment of a vast permanent bazaar. I am not competent to estimate the real utility of these great shows. What I do see very clearly is that they involve difficulties of site, huge working expenses, the potentiality of endless squabbles, and apparently the cheapening of knighthood.

As for the site proposed at South Kensington, "the arguments used in its favour in the report would be conclusive if the dry light of reason were the sole guide of human action." But it would alienate other powerful and wealthy bodies, which were interested in the Central Institute of the City and Guilds Technical Institute, "which looks so portly outside and is so very much starved inside."

He wrote again to the *Times* on March 21:—

The Central Institute is undoubtedly a splendid monument of the munificence of the city. But munificence without method may arrive at results indistinguishably similar to those of stinginess. I have been blamed for saying that the Central Institute is "starved." Yet a man who has only half as much food as he needs is indubitably starved, even though his short rations consist of ortolans and are served upon gold plate.

Only half the plan of operations as drawn up by the Committee was, or could be, carried out on existing funds.

The later part of his letter was printed by the Committee as defining the functions of the new Institute:—

That with which I did intend to express my strong sympathy was the intention which I thought I discerned to establish something which should play the same part in regard to the advancement of industrial knowledge which has been played in regard to science and learning in general, in these realms, by the Royal Society and the Universities. . . . I pictured the Imperial Institute to myself as a house of call for all those who are concerned in the advancement of industry; as a place in which the home-keeping industrial could find out all he wants to know about colonial industry and the colonist about home industry; as a sort of neutral ground on which the capitalist and the artisan would be equally welcome; as a centre of intercommunication in which they might enter into friendly discus-

sion of the problems at issue between them, and, perchance, arrive at a friendly solution of them. I imagined it a place in which the fullest stores of industrial knowledge would be made accessible to the public; in which the higher questions of commerce and industry would be systematically studied and elucidated; and where, as in an industrial university, the whole technical education of the country might find its centre and crown. If I earnestly desire to see such an institution created, it is not because I think that or anything else will put an end to pauperism and want—as somebody has absurdly suggested,—but because I believe it will supply a foundation for that scientific organisation of our industries which the changed conditions of the times render indispensable to their prosperity. I do not think I am far wrong in assuming that we are entering, indeed, have already entered, upon the most serious struggle for existence to which this country has ever been committed. The latter years of the century promise to see us embarked in an industrial war of far more serious import than the military wars of its opening years. On the east, the most systematically instructed and best-informed people in Europe are our competitors; on the west, an energetic off-shoot of our own stock, grown bigger than its parent, enters upon the struggle possessed of natural resources to which we can make no pretension, and with every prospect of soon possessing that cheap labour by which they may be effectually utilised. Many circumstances tend to justify the hope that we may hold our own if we are careful to "organise victory." But to those who reflect seriously on the prospects of the population of Lancashire and Yorkshire—should the time ever arrive when the goods which are produced by their labour and their skill are to be had cheaper elsewhere—to those who remember the cotton famine and reflect how much worse a customer famine would be, the situation appears very grave.

On February 19 and 22, he wrote again to the *Times* declaring against the South Kensington site. It was too far from the heart of commercial organisation in the city, and the city people were preparing to found a similar institution of their own. He therefore wished to prevent the Imperial Institute from becoming a weak and unworthy memorial of the reign.

A final letter to the *Times* on March 21, was evoked by the fact that Lord Hartington, in giving away the prizes at the Polytechnic Y.M.C.A., had adopted Huxley's position as defined in his speech, and declared that science ought to be aided on precisely the same grounds on which we aid the army and navy.

In this letter he asks, how do we stand prepared for the task thus imperatively set us? We have the machinery for providing instruction and information, and for catching capable men, but both in a disjointed condition—"all mere torsos — fine, but fragmentary." "The ladder from the School Board to the Universities, about which I dreamed dreams many years ago, has not yet acquired much more substantiality than the ladder of Jacob's vision," but the Science and Art Department, the Normal School of Science, and the Central Institute only want the means to carry out the recommendations already made by impartial and independent authority. "Economy does not lie in sparing money, but in spending it wisely."

He concluded with an appeal to Lord Hartington to take up this task of organising industrial education and bring it to a happy issue.

A proposal was also made to the Royal Society to co-operate, and Sir M. Foster writes on February 19: "We have appointed a Committee to consider and draw up a draft reply with a view of the R.S. following up your letter."

To this Huxley replied on the 22nd:—

. . . My opinion is that the R.S. has no right to spend its money or pledge its credit for any but scientific objects, and that we have nothing to do with sending round the hat for other purposes.

The project of the Institute Committee as it stands connected with the South Kensington site—is condemned by all the city people and will receive none but the most grudging support from them. They are going to set up what will be practically an Institute of their own in the city.

The thing is already a failure. I daresay it will go on and be varnished into a simulacrum of success—to become eventually a ghost like the Albert Hall or revive as a tea garden."

The following letter also touches upon the function of the Institute from the commercial side:—

4 MARLBOROUGH PLACE,
Feb. 20, 1887.

MY DEAR DONNELLY—Mr. Law's suggestion gives admirable definition to the notions that were floating in my mind when I wrote in my letter to the *Times*, that I imagined the Institute would be "a place in which the fullest stores of industrial knowledge would be made accessible to the public." A man of business

who wants to know anything about the prospects of trade with say, Boorioboola-gha (*vide* Bleak House) ought to be able to look into the Institute and find there somebody, who will at once fish out for him among the documents in the place all that is known about Boorioboola.

But a Commercial Intelligence Department is not all that is wanted, *vide* valuable letter aforesaid.

I hope your appetite for the breakfast was none the worse for last night's doings—mine was rather improved, but I am dog-tired.—Ever yours very faithfully, T. H. HUXLEY.

I return Miss ——'s note. She evidently thinks my cage is labelled "These animals bite."

Later in the year, the following letters show him continuing the campaign. But an attack of pleurisy, which began the very day of the Jubilee, prevented him from coming to speak at a meeting upon Technical Education. In the autumn, however, he spoke on the subject at Manchester, and had the satisfaction of seeing the city "go solid," as he expressed it, for technical education. The circumstances of this visit are given later.

4 MARLBOROUGH PLACE, N.W.,
May 1, 1887.

MY DEAR ROSCOE—I met Lord Hartington at the Academy Dinner last night and took the opportunity of urging upon him the importance of following up his technical education speech. He told me he had been in communication with you about the matter, and he seemed to me to be very well disposed to your plans.

I may go on crying in the wilderness until I am hoarse, with no result, but if he and you and Mundella will take it up, something may be done.—Ever yours very faithfully, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
June 28, 1887.

MY DEAR ROSCOE—Donnelly was here on Sunday and was quite right up to date. I felt I ought to be better, and could not make out why the deuce I was not. Yesterday the mischief came out. There is a touch of pleurisy—which has been covered by the muscular rheumatism.

So I am relegated to bed and told to stop there—with the company of cataplasms to keep me lively.

I do not think the attack in any way serious — but M. Pl.

is a gentleman not to be trifled with, when you are over sixty, and there is nothing for it but to obey my doctor's orders.

Pray do not suppose I would be stopped by a trifle, if my coming to the meeting[1] would really have been of use. I hope you will say how grieved I am to be absent.—Ever yours very faithfully,

T. H. HUXLEY.

4 MARLBOROUGH PLACE,
June 29, 1887.

MY DEAR ROSCOE—I have scrawled a variety of comments on the paper you sent me. Deal with them as you think fit.

Ever since I was on the London School Board I have seen that the key of the position is in the Sectarian Training Colleges and that wretched imposture, the pupil teacher system. As to the former *Delendae sunt* no truce or pact to be made with them, either Church or Dissenting. Half the time of their students is occupied with grinding into their minds their tweedle-dum and tweedle-dee theological idiocies, and the other half in cramming them with boluses of other things to be duly spat out on examination day. Whatever is done do not let us be deluded by any promises of theirs to hook on science or technical teaching to their present work.

I am greatly disgusted that I cannot come to Tyndall's dinner to-night[2]—but my brother-in-law's death would have stopped me (the funeral to-day)—even if my doctor had not forbidden me to leave my bed. He says I have some pleuritic effusion on one side and must mind my P's and Q's.—Ever yours very faithfully,

T. H. HUXLEY.

A good deal of correspondence at this time with Sir M. Foster relates to the examinations of the Science and Art Department. He was still Dean, it will be remembered, of the Royal College of Science, and further kept up his connection with the Department by acting in an honorary capacity as Examiner, setting questions, but less and less looking over papers, acting as the channel for official communications, as when he writes (April 24), "I send you some Department documents — nothing alarming, only more worry for the Asst. Examiners, and that *we* do not mind"; and finally signing the Report. But to do this after taking so small a share in the actual work of examining, grew more and more repugnant to him, till on October 12 he writes:—

[1] Of July 1, on Technical Education.

[2] See p. 166.

I will read the Report and sign it if need be—though there really must be some fresh arrangement.

Of course I have entire confidence in your judgment about the examination, but I have a mortal horror of putting my name to things I do not know of my own knowledge.

In addition to these occupations, he wrote a short paper upon a fossil, Ceratochelys, which was read at the Royal Society on March 31; while on April 7 he read at the Linnean (*Botany:* vol. xxiv. pp. 101-124), his paper, "The Gentians: Notes and Queries," which had sprung from his holiday amusement at Arolla.

Philosophy, however, claimed most of his energies. The campaign begun in answer to the incursion of Mr. Lilly was continued in the article "Science and Pseudo-Scientific Realism" (*Coll. Essays*, v. 59-89) which appeared in the *Nineteenth Century* for February 1887. The text for this discourse was the report of a sermon by Canon Liddon in which that eminent preacher spoke of catastrophes as the antithesis of physical law, yet possible inasmuch as a "lower law" may be "suspended" by the "intervention of a higher," a mode of reasoning which he applied to the possibility of miracles such as that of Cana.

The man of science was up in arms against this incarnation of abstract terms, and offered a solemn protest against that modern recrudescence of ancient realism which speaks of "laws of nature" as though they were independent entities, agents, and efficient causes of that which happens instead of simply our name for observed successions of facts

Carefully as all personalities had been avoided in this article, it called forth a lively reply from the Duke of Argyll, rebuking him for venturing to criticise the preacher whose name was now brought forward for the first time, and raising a number of other questions, philosophical, geological and biological, to which Huxley rejoined with some selections from the authentic history of these points in "Science and Pseudo-Science" (*Nineteenth Century*, April 1887, *Coll. Essays*, v. 90-125).

Moreover, judging from the vivacity of the Duke's reply that some of the shafts of the first article must have struck nearer home than the pulpit of St. Paul's, he was induced

to read "The Reign of Law," the second chapter of which, dealing with the nature of "Law," he now criticised sharply as "a sort of 'summa' of pseudo-scientific philosophy," with its confusions of law and necessity, law and force, "law in the sense, not merely of a rule, but of a cause."

He wound up with some banter upon the Duke's picture of a scientific Reign of Terror, whereby, it seemed, all men of science were compelled to accept the Darwinian faith, and against which Huxley himself was preparing to rebel, as if,

> forsooth, I am supposed to be waiting for the signal of "revolt," which some fiery spirits among these young men are to raise before I dare express my real opinions concerning questions about which we older men had to fight in the teeth of fierce public opposition and obloquy—of something which might almost justify even the grandiloquent epithet of a Reign of Terror—before our excellent successors had left school.

Here for a while the debate ceased. But in the September number of the *Nineteenth Century*, the Duke of Argyll returned to the fray with an article called "A Great Lesson," in which he attempted to offer evidence in support of his assertions concerning the scientific reign of terror. The two chief pieces of evidence adduced were Bathybius and Dr. (now Sir J.) Murray's theory of coral reefs. The former was instanced as a blunder due to the desire of finding support for the Darwinian theory in the existence of this widespread primordial life; the latter as a case in which a new theory had been systematically burked, for fear of damaging the infallibility of Darwin, who had propounded a different theory of coral reefs!

Huxley's reply to this was contained in the latter half of an article which appeared in the *Nineteenth Century* for November 1887, under the title of "Science and the Bishops" (reprinted both in *Controverted Questions* and in the *Collected Essays*, v. 126, as "An Episcopal Trilogy"). Preaching at Manchester this autumn, during the meeting of the British Association, the Bishops of Carlisle, Bedford, and Manchester had spoken of science not only with knowledge, but in the spirit of equity and generosity. "These sermons," he exclaims, "are what the Germans call Epochemachend!"

How often was it my fate (he continues), a quarter of a century ago, to see the whole artillery of the pulpit brought to bear upon the doctrine of evolution and its supporters! Anyone unaccustomed to the amenities of ecclesiastical controversy would have thought we were too wicked to be permitted to live.

After thus welcoming these episcopal advances, he once more repudiated the *à priori* argument against the efficacy of prayer, the theme of one of the three sermons, and then proceeded to discuss another sermon of a dignitary of the Church, which had been sent to him by an unknown correspondent, for "there seems to be an impression abroad—I do not desire to give any countenance to it—that I am fond of reading sermons."

Now this preacher was of a very different mind from the three bishops. Instead of dwelling upon the "supreme importance of the purely spiritual in our faith," he warned his hearers against dropping off any of the miraculous integument of their religion. "Christianity is essentially miraculous, and falls to the ground if miracles be impossible." He was uncompromisingly opposed to any accommodation with advancing knowledge, or with the high standard of veracity, enforced by the nature of their pursuits, in which Huxley found the only difference between scientific men and any other class of the community.

But it was not merely this misrepresentation of science on its speculative side which Huxley deplored; he was roused to indignation by an attack on its morality. The preacher reiterated the charge brought forward in the "Great Lesson," that Dr. Murray's theory of coral reefs had been actually suppressed for two years, and that by the advice of those who accepted it, for fear of upsetting the infallibility of the great master.

Hereupon he turned in downright earnest upon the originator of the assertion, who, he considered, had no more than the amateur's knowledge of the subject. A plain statement of the facts was refutation enough. The new theories, he pointed out, had been widely discussed; they had been adopted by some geologists, although Darwin himself had not been converted, and after careful and prolonged re-examination of the question, Professor Dana, the greatest

living authority on coral reefs, had rejected them. As Professor Judd said, "If this be a 'conspiracy of silence,' where, alas! can the geological speculator seek for fame?" Any warning not to publish in haste was but advice to a still unknown man not to attack a seemingly well-established theory without making sure of his ground.[1]

As for the Bathybius myth, Huxley pointed out that his announcement of the discovery had been simply a statement of the actual facts, and that so far from seeing in it a confirmation of Darwinian hypotheses, he was careful to warn his readers "to keep the questions of fact and the questions of interpretation well apart." "That which interested me in the matter," he says, "was the apparent analogy of *Bathybius* with other well-known forms of lower life," . . . "if *Bathybius* were brought up alive from the bottom of the Atlantic to-morrow, the fact would not have the slightest bearing, that I can discern, upon Mr. Darwin's speculations, or upon any of the disputed problems of biology." And as for his "eating the leek" afterwards, his ironical account of it is an instance of how the adoption of a plain, straightforward course can be described without egotism.

> The most considerable difference I note among men (he concludes) is not in their readiness to fall into error, but in their readiness to acknowledge these inevitable lapses.

As the Duke in a subsequent article did not unequivocally withdraw his statements, Huxley declined to continue public controversy with him.

Three years later, writing (October 10, 1890) to Sir J. Donnelly apropos of an article by Mr. Mallock in the *Nineteenth Century*, which made use of the "Bathybius myth," he says:—

> Bathybius is far too convenient a stick to beat this dog with to be ever given up, however many lies may be needful to make the weapon effectual.
>
> I told the whole story in my reply to the Duke of Argyll, but of course the pack give tongue just as loudly as ever. Clerically-minded people cannot be accurate, even the liberals.

I give here the letter sent to the "unknown corre-

[1] Letter in *Nature*.

spondent" in question, who had called his attention to the fourth of these sermons.

4 MARLBOROUGH PLACE,
Sept. 30, 1887.

I have but just returned to England after two months' absence, and in the course of clearing off a vast accumulation of letters, I have come upon yours.

The Duke of Argyll has been making capital out of the same circumstances as those referred to by the Bishop. I believe that the interpretation put upon the facts by both is wholly misleading and erroneous.

It is quite preposterous to suppose that the men of science of this or any other country have the slightest disposition to support any view which may have been enunciated by one of their colleagues, however distinguished, if good grounds are shown for believing it to be erroneous.

When Mr. Murray arrived at his conclusions I have no doubt he was advised to make his ground sure before he attacked a generalisation which appeared so well founded as that of Mr. Darwin respecting coral reefs.

If he had consulted me I should have given him that advice myself, for his own sake. And whoever advised him, in that sense, in my opinion did wisely.

But the theologians cannot get it out of their heads, that as they have creeds, to which they must stick at all hazards, so have the men of science. There is no more ridiculous delusion. We, at any rate, hold ourselves morally bound to "try all things and hold fast to that which is good"; and among public benefactors, we reckon him who explodes old error, as next in rank to him who discovers new truth.

You are at liberty to make any use you please of this letter.

Two letters on kindred subjects may appropriately follow in this place. Thanking M. Henri Gadeau de Kerville for his "Causeries sur le Transformisme," he writes (Feb. 1):—

DEAR SIR—Accept my best thanks for your interesting "causeries," which seem to me to give a very clear view of the present state of the evolution doctrine as applied to biology.

There is a statement on p. 87 "Après sa mort Lamarck fut complètement oublié," which may be true for France but certainly is not so for England. From 1830 onwards for more than forty years Lyell's "Principles of Geology" was one of the most widely read scientific books in this country, and it contains an elaborate criticism of Lamarck's views. Moreover, they were largely debated

during the controversies which arose out of the publication of the "Vestiges of Creation" in 1844 or thereabouts. We are certainly not guilty of any neglect of Lamarck on this side of the Channel.

If I may make another criticism it is that, to my mind, atheism is, on purely philosophical grounds, untenable. That there is no evidence of the existence of such a being as the God of the theologians is true enough; but strictly scientific reasoning can take us no further. Where we know nothing we can neither affirm nor deny with propriety.

The other is in answer to the Bishop of Ripon, enclosing a few lines on the principal representatives of modern science, which he had asked for.

4 MARLBOROUGH PLACE,
June 16, 1887.

MY DEAR BISHOP OF RIPON—I shall be very glad if I can be of any use to you now and always. But it is not an easy task to put into half-a-dozen sentences, up to the level of your vigorous English, a statement that shall be unassailable from the point of view of a scientific fault-finder—which shall be intelligible to the general public and yet accurate.

I have made several attempts and enclose the final result. I think the substance is all right, and though the form might certainly be improved, I leave that to you. When I get to a certain point of tinkering my phrases I have to put them aside for a day or two.

Will you allow me to suggest that it might be better not to name any living man? The temple of modern science has been the work of many labourers not only in our own but in other countries. Some have been more busy in shaping and laying the stones, some in keeping off the Sanballats, some prophetwise in indicating the course of the science of the future. It would be hard to say who has done best service. As regards Dr. Joule, for example, no doubt he did more than any one to give the doctrine of the conservation of energy precise expression, but Mayer and others run him hard.

Of deceased Englishmen who belong to the first half of the Victorian epoch, I should say that Faraday, Lyell, and Darwin had exerted the greatest influence, and all three were models of the highest and best class of physical philosophers.

As for me, in part from force of circumstance and in part from a conviction I could be of most use in that way, I have played the part of something between maid-of-all-work and gladiator-general for Science, and deserve no such prominence as your kindness has assigned to me.—With our united kind regards to Mrs. Carpenter and yourself, ever yours very faithfully, T. H. HUXLEY.

A brief note, also, to Lady Welby, dated July 25, is characteristic of his attitude towards unverified speculation.

I have looked through the paper you have sent me, but I cannot undertake to give any judgment upon it. Speculations such as you deal with are quite out of my way. I get lost the moment I lose touch of valid fact and incontrovertible demonstration and find myself wandering among large propositions, which may be quite true but which would involve me in months of work if I were to set myself seriously to find out whether, and in what sense, they are true. Moreover, at present, what little energy I possess is mortgaged to quite other occupations.

The following letter was in answer to a request which I was commissioned to forward him, that he would consent to serve on an honorary committee of the Société des Professeurs de Français en Angleterre.

Jan. 17, 1887.

I quite forgot to say anything about the Comité d'honneur, and as you justly remark in the present strained state of foreign politics the consequences may be serious. Please tell your colleague that I shall be "proud an' 'appy." You need not tell him that my pride and happiness are contingent on having nothing to do for the honour.

In the meantime, the ups and downs of his health are reflected in various letters of these six months. Much set up by his stay in the Isle of Wight, he writes from Shanklin on April 11 to Sir E. Frankland, describing the last meeting of the x Club, which the latter had not been able to attend, as he was staying in the Riviera:—

Hooker, Tyndall, and I alone turned up last Thursday. Lubbock had gone to High Elms about used up by the House of Commons, and there was no sign of Hirst.

Tyndall seemed quite himself again. In fact, we three old fogies voted unanimously that we were ready to pit ourselves against any three youngsters of the present generation in walking, climbing, or head-work, and give them odds.

I hope you are in the same comfortable frame of mind.

I had no notion that Mentone had suffered so seriously in the earthquake of 1887. Moral for architects: read your Bible and build your house upon the rock.

The sky and sea here may be fairly matched against Mentone or

any other of your Mediterranean places. Also the east wind, which has been blowing steadily for ten days, and is nearly as keen as the Tramontana. Only in consequence of the long cold and drought not a leaf is out.

Shanklin, indeed, suited him so well that he had half a mind to settle there. "There are plenty of sites for building," he writes home in February, "but I have not thought of commencing a house yet." However, he gave up the idea; Shanklin was too far from town.

But though he was well enough as long as he kept out of London, a return to his life there was not possible for any considerable time. On May 19, just before a visit to Mr. F. Darwin at Cambridge, I find that he went down to St. Albans for a couple of days, to walk; and on the 27th he betook himself, terribly ill and broken down, to the Savernake Forest Hotel, in hopes of getting "screwed up." This "turned out a capital speculation, a charming spick-and-span little country hostelry with great trees in front." But the weather was persistently bad, "the screws got looser rather than tighter," and again he was compelled to stay away from the *x*.

A week later, however, he writes:—

The weather has been detestable, and I got no good till yesterday, which was happily fine. Ditto to-day, so I am picking up, and shall return to-morrow, as, like an idiot as I am, I promised to take the chair at a public meeting about a Free Library for Marylebone on Tuesday evening.

I wonder if you know this country. I find it charming.

On the same day as that which was fixed for the meeting in favour of the Free Library, he had a very interesting interview with the Premier, of which he left the following notes, written at the Athenæum immediately after:—

June 7, 1887.

Called on Lord Salisbury by appointment at 3 P.M., and had twenty minutes' talk with him about the "matter of some public interest" mentioned in his letter of the (29th).

This turned out to be a proposal for the formal recognition of distinguished services in Science, Letters, and Art by the institution of some sort of order analogous to the *Pour le Mérite*. Lord Salisbury spoke of the anomalous present mode of distributing

honours, intimated that the Queen desired to establish a better system, and asked my opinion.

I said that I should like to separate my personal opinion from that which I believed to obtain among the majority of scientific men; that I thought many of the latter were much discontented with the present state of affairs, and would highly approve of such a proposal as Lord Salisbury shadowed forth.

That, so far as my own personal feeling was concerned, it was opposed to anything of the kind for Science. I said that in Science we had two advantages—first, that a man's work is demonstrably either good or bad; and secondly, that the "contemporary posterity" of foreigners judges us, and rewards good work by membership of Academies and so forth.

In Art, if a man chooses to call Raphael a dauber, you can't prove he is wrong; and literary work is just as hard to judge.

I then spoke of the dangers to which science is exposed by the undue prominence and weight of men who successfully apply scientific knowledge to practical purposes—engineers, chemical inventors, etc. etc.; said it appeared to me that a Minister having such order at his disposal would find it very difficult to resist the pressure brought by such people as against the man of high science who had not happened to have done anything to strike the popular mind.

Discussed the possibility of submission of names by somebody for the approval and choice of the Crown. For Science, I thought the R.S. Council might discharge that duty very fairly. I thought that the Academy of Berlin presented people for the *Pour le Mérite*, but Lord S. thought not.

In the course of conversation I spoke of Hooker's case as a glaring example of the wrong way of treating distinguished men. Observed that though I did not personally care for or desire the institution of such honorary order, yet I thought it was a mistake in policy for the Crown as the fountain of honour to fail in recognition of that which deserves honour in the world of Science, Letters, and Art.

Lord Salisbury smilingly summed up. "Well, it seems that you don't desire the establishment of such an order, but that if you were in my place you would establish it," to which I assented.

Said he had spoken to Leighton, who thought well of the project.

It was not long, however, before he received imperative notice to quit town with all celerity. He fell ill with what turned out to be pleurisy; and after recruiting at Ilkley, went again to Switzerland.

4 MARLBOROUGH PLACE,
June 27, 1887.

MY DEAR FOSTER— . . . I am very sorry that it will be impossible for me to attend [the meeting of committee down for the following Wednesday]. If I am well enough to leave the house I must go into the country that day to attend the funeral of my wife's brother-in-law and my very old friend Fanning, of whom I may have spoken to you. He has been slowly sinking for some time, and this morning we had news of his death.

Things have been very crooked for me lately. I had a conglomerate of engagements of various degrees of importance in the latter half of last week, and had to forego them all, by reason of a devil in the shape of muscular rheumatism of one side, which entered me last Wednesday, and refuses to be wholly exorcised (I believe it is my Jubilee Honour).[1] Along with it, and I suppose the cause of it, a regular liver upset. I am very seedy yet, and even if Fanning's death had not occurred I doubt if I should have been ready to face the Tyndall dinner.

The reference to this "Tyndall dinner" is explained in the following letters, which also refer to a meeting of the London University, in which the projects of reform which he himself supported met with a smart rebuff.

4 MARLBOROUGH PLACE,
May 13, 1887.

MY DEAR TYNDALL—I am very sorry to hear of your gout, but they say when it comes out at the toes it flies from the better parts, and that is to the good.

There is no sort of reason why unsatisfied curiosity should continue to disturb your domestic hearth; your wife will have the gout too if it goes on. "They" can't bear the strain.

The history of the whole business is this. A day or two before I spoke to you, Lockyer told me that various people had been talking about the propriety of recognising your life-long work in some way or other; that, as you would not have anything else, a dinner had been suggested, and finally asked me to inquire whether you would accept that expression of goodwill. Of course I said I would, and I asked accordingly.

After you had assented I spoke to several of our friends who

[1] On the same day he describes this to Sir J. Evans:—"I have hardly been out of the house as far as my garden, and not much off my bed or sofa since I saw you last. I have had an affection of the muscles of one side of my body, the proper name of which I do not know, but the similitude thereof is a bird of prey periodically digging in his claws and stopping your breath in a playful way."

were at the Athenæum, and wrote to Lockyer. I believe a strong committee is forming, and that we shall have a scientific jubilation on a large scale; but I have purposely kept in the background, and confined myself, like Bismarck, to the business of "honest broker."

But of course nothing (beyond preliminaries) can be done till you name the day, and at this time of year it is needful to look well ahead if a big room is to be secured. So if you can possibly settle that point, pray do.

There seems to have been some oversight on my wife's part about the invitation, but she is stating her own case. We go on a visit to Mrs. Darwin to Cambridge on Saturday week, and the Saturday after that I am bound to be at Eton.

Moreover, I have sacrificed to the public Moloch so far as to promise to take the chair at a public meeting in favour of a Free Library for Marylebone on the 7th. As Wednesday's work at the Geological Society and the soirée knocked me up all yesterday, I shall be about finished I expect on the 8th. If you are going to be at Hindhead after that, and would have us for a day, it would be jolly; but I cannot be away long, as I have some work to finish before I go abroad.

I never was so uncomfortable in my life, I think, as on Wednesday when L—— was speaking, just in front of me, at the University. Of course I was in entire sympathy with the tenor of his speech, but I was no less certain of the impolicy of giving a chance to such a master of polished putting-down as the Chancellor. You know Mrs. Carlyle said that Owen's sweetness reminded her of sugar of lead. Granville's was that plus butter of antimony!—Ever yours very faithfully, T. H. HUXLEY.

N.B.—Don't swear, but get Mrs. Tyndall, who is patient and good-tempered, to read this long screed.

May 18, 1887.

MY DEAR TYNDALL—I was very glad to get your letter yesterday morning, and I conveyed your alteration at once to Rücker, who is acting as secretary. I asked him to communicate with you directly to save time.

I hear that the proposal has been received very warmly by all sorts and conditions of men, and that is quite apart from any action of your closer personal friends. Personally I am rather of your mind about the "dozen or score" of the faithful. But as that was by no means to the mind of those who started the project, and, moreover, might have given rise to some heartburning, I have not thought it desirable to meddle with the process of spontaneous combustion. So look out for a big bonfire somewhere in the middle of June! I have a hideous cold, and can only hope that the bracing air of Cambridge, where we go on Saturday, may set me right.—Ever yours very faithfully, T. H. HUXLEY.

To recover from his pleuritic "Jubilee Honour" he went for a fortnight (July 11-25) to Ilkley, which had done him so much good before, intending to proceed to Switzerland as soon as he conveniently could.

ILKLEY, *July* 15, 1887.

MY DEAR FOSTER—I was very much fatigued by the journey here, but the move was good, and I am certainly mending, though not so fast as I could wish. I expect some adhesions are interfering with my bellows. As soon as I am fit to travel I am thinking of going to Lugano, and thence to Monte Generoso. The travelling is easy to Lugano, and I know the latter place.

My notion is I had better for the present avoid the chances of a wet, cold week in the high places.

M.B.A.[1] . . . As to the employment of the Grant, I think it ought to be on something definite and limited. The Pilchard question would be an excellent one to take up.

—— seems to have a notion of employing it on some geological survey of Plymouth Sound, work that would take years and years to do properly, and nothing in the way of clear result to show.

I hope to be in London on my way abroad in less than ten days' time, and will let you know.—Ever yours very faithfully,

T. H. HUXLEY.

And on the same day to Sir J. Donnelly :—

I expect . . . that I shall have a slow convalescence. Lucky it is no worse!

Much fighting I am likely to do for the Unionist cause or any other! But don't take me for one of the enragés. If anybody will show me a way by which the Irish may attain all they want without playing the devil with us, I am ready to give them their own talking-shop or anything else.

But that is as much writing as I can sit up and do all at once.

[1] Marine Biological Association.

CHAPTER XI

1887

ON the last day of July he left England for Switzerland and did not return till the end of September. A second visit to Arolla worked a great change in him. He renewed his Gentian studies also, with unflagging ardour. The following letters give some idea of his doings and interests:—

HOTEL DU MONT COLLON, AROLLA, SWITZERLAND,
Aug. 28, 1887.

MY DEAR FOSTER—I know you will be glad to hear that I consider myself completely set up again. We went to the Maderaner Thal and stayed a week there. But I got no good out of it. It is charmingly pretty, but damp; and, moreover, the hotel was 50 per cent too full of people, mainly Deutschers, and we had to turn out into the open air after dinner because the salon and fumoir were full of beds. So, in spite of all prudential considerations, I made up my mind to come here. We travelled over the Furca, and had a capital journey to Evolena. Thence I came on muleback (to my great disgust, but I could not walk a bit uphill) here. I began to get better at once; and in spite of a heavy snowfall and arctic weather a week ago, I have done nothing but mend. We have glorious weather now, and I can take almost as long walks as last year.

We have some Cambridge people here: Dr. Peile of Christ's and his family. Also Nettleship of Oxford. What is the myth about the Darwin tree in the Pall Mall?[1] Dr. Peile believes it to be all a flam.

Forel has just been paying a visit to the Arolla glacier for the purpose of ascertaining the internal temperature. He told me he

[1] "A tree planted yesterday in the centre of the circular grass-plot in the first court of Christ's College, in Darwin's honour, was 'spirited' away at night." —*P.M.G.* August 23, 1887.

much desired to have a copy of the Report of the Krakatoa Committee. If it is published, will you have a copy sent to him? He is Professor at Lausanne, and a very good man.

Our stay here will depend on the weather. At present it is perfect. I do not suppose we shall leave before 7th or 8th of September, and we shall get home by easy stages not much before the end of the month.—Ever yours very faithfully,

T. H. HUXLEY.

Madder than ever on Gentians.

The following is in reply to Sir E. Frankland's enquiries with reference to the reported presence of fish in the reservoirs of one of the water-companies.

HOTEL RIGHI VAUDOIS, GLION,
Sept. 16, 1887.

We left Arolla about ten days ago, and after staying a day at St. Maurice in consequence of my wife's indisposition, came on here where your letter just received has followed me. I am happy to say I am quite set up again, and as I can manage my 1500 or 2000 feet as well as ever, I may be pretty clear that my pleurisy has not left my lung sticking anywhere.

I will take your enquiries *seriatim*. (1) The faith of your small boyhood is justified. Eels do wander overland, especially in the wet stormy nights they prefer for migration. But so far as I know this is the habit only of good-sized, downwardly-moving eels. I am not aware that the minute fry take to the land on their journey upwards.

(2) Male eels are now well known. I have gone over the evidence myself and examined many. But the reproductive organs of both sexes remain undeveloped in fresh water—just the contrary of salmon, in which they remain undeveloped in salt water.

(3) So far as I know, no eel with fully-developed reproductive organs has yet been seen. Their matrimonial operations go on in the sea where they spend their honeymoon, and we only know the result in the shape of the myriads of thread-like eel-lets, which migrate up in the well-known "eel-fare."

(4) On general principles of eel-life I think it possible that the Inspector's theory *may* be correct. But your story about the roach is a poser. They certainly do not take to walking abroad. It reminds me of the story of the Irish milk-woman who was confronted with a stickleback found in the milk. "Sure, then, it must have been bad for the poor cow when that came through her teat."

Surely the Inspector cannot have overlooked such a crucial fact as the presence of other fish in the reservoirs?

We shall be here another week, and then move slowly back to London. I am loth to leave this place, which is very beautiful with splendid air and charming walks in all directions—two or three thousand feet up if you like.

HOTEL RIGHI VAUDOIS, GLION, SWITZERLAND,
Sept. 16, 1887.

MY DEAR DONNELLY—We left Arolla for this place ten days ago, but my wife fell ill, and we had to stay a day at St. Maurice. She has been more or less out of sorts ever since until to-day. However, I hope now she is all right again.

This is a very charming place at the east end of the Lake of Geneva—1500 feet above the lake—and you can walk 3000 feet higher up if you like.

What they call a "funicular railway" hauls you up a gradient of 1 in 1¾ from the station on the shore in ten minutes. At first the sensation on looking down is queer, but you soon think nothing of it. The air is very fine, the weather lovely, the feeding unexceptionable, and the only drawback consists in the "javelins," as old Francis Head used to call them—stinks of such wonderful crusted flavour that they must have been many years in bottle. But this is a speciality of all furrin parts that I have ever visited.

I am very well and extremely lazy so far as my head goes—legs I am willing to use to any extent up hill or down dale. They wanted me to go and speechify at Keighley in the middle of October, but I could not get permission from the authorities. Moreover, I really mean to keep quiet and abstain even from good words (few or many) next session. My wife joins with me in love to Mrs. Donnelly and yourself.

She thought she had written, but doubts whether in the multitude of her letters she did not forget.—Ever yours, T. H. HUXLEY.

From Glion also he writes to Sir M. Foster :—

I have been doing some very good work on the Gentians in the interests of the business of being idle.

The same subject recurs in the next letter :—

HOTEL RIGHI VAUDOIS, GLION, SWITZERLAND,
Sept. 21, 1887.

MY DEAR HOOKER—I saw in the *Times* yesterday the announcement of Mr. Symonds' death. I suppose the deliverance from so painful a malady as heart-disease is hardly to be lamented in one sense; but these increasing gaps in one's intimate circle are very saddening, and we feel for Lady Hooker and you. My wife has

been greatly depressed by hearing of Mrs. Carpenter's fatal disorder. One cannot go away for a few weeks without finding somebody gone on one's return.

I got no good at the Maderaner Thal, so we migrated to our old quarters at Arolla, and there I picked up in no time, and in a fortnight could walk as well as ever. So if there are any adhesions they are pretty well stretched by this time.

I have been at the Gentians again, and worked out the development of the flower in *G. purpurea* and *G. campestris*. The results are very pretty. They both start from a thalamifloral condition, then become corollifloral, *G. purpurea* at first resembling *G. lutea* and *G. campestris*, an *Ophelia*, and then specialise to the *Ptychantha* and *Stephanantha* forms respectively.

In *G. campestris* there is another very curious thing. The anthers are at first introrse, but just before the bud opens they assume this position [sketch] and then turn right over and become extrorse. In *G. purpurea* this does not happen, but the anthers are made to open outwards by their union on the inner side of the slits of dehiscence.

There are several other curious bits of morphology have turned up, but I reserve them for our meeting.

Beyond pottering away at my Gentians and doing a little with that extraordinary *Cynanchum* I have been splendidly idle. After three weeks of the ascetic life of Arolla, we came here to acclimatise ourselves to lower levels and to fatten up. I go straight through the *table d'hôte* at each meal, and know not indigestion.

My wife has fared not so well, but she is all right again now. We go home by easy stages, and expect to be in Marlborough Place on Tuesday.

With all our best wishes to Lady Hooker and yourself—Ever yours, T. H. HUXLEY.

The second visit to Arolla did as much good as the first. Though unable to stay more than a week or two in London itself, he was greatly invigorated. His renewed strength enabled him to carry out vigorously such work as he had put his hand to, and still more, to endure one of the greatest sorrows of his whole life which was to befall him this autumn in the death of his daughter Marian.

The controversy which fell to his share immediately upon his return, has already been mentioned (p. 158). This was all part of the war for science which he took as his necessary portion in life; but he would not plunge into any other forms of controversy, however interesting. So he writes to

his son, who had conveyed him a message from the editor of a political review :—

4 MARLBOROUGH PLACE,
Oct. 19, 1887.

No political article from me! I have had to blow off my indignation incidentally now and then lest worse might befall me, but as to serious political controversy, I have other fish to fry. Such influence as I possess may be most usefully employed in promoting various educational movements now afoot, and I do not want to bar myself from working with men of all political parties.

So excuse me in the prettiest language at your command to Mr. A.

Nevertheless politics very soon drew him into a new conflict, in defence, be it said, of science against the possible contamination of political influences. Prof. (now Sir) G. G. Stokes, his successor in the chair of the Royal Society, accepted an invitation from the University of Cambridge to stand for election as their member of Parliament, and was duly elected. This was a step to which many Fellows of the Royal Society, and Huxley in especial, objected very strongly. Properly to fulfil the duties of both offices at once was, in his opinion, impossible. It might seem for the moment an advantage that the accredited head of the scientific world should represent its interests officially in Parliament; but the precedent was full of danger. Science being essentially of no party, it was especially needful for such a representative of science to keep free from all possible entanglements; to avoid committing science, as it were, officially to the policy of a party, or, as its inevitable consequence, introducing political considerations into the choice of a future President.

During his own tenure of the Presidency Huxley had carefully abstained from any official connection with societies or public movements on which the feeling of the Royal Society was divided, lest as a body it might seem committed by the person and name of its President. He thought it a mistake that his successor should even be President of the Victoria Institute.

Thus there is a good deal in his correspondence

bearing on this matter. He writes on November 6 to Sir J. Hooker :—

I am extremely exercised in my mind about Stokes' going into Parliament (as a strong party man, moreover) while still P.R.S. I do not know what you may think about it, but to my mind it is utterly wrong—and degrading to the Society—by introducing politics into its affairs.

And on the same day to Sir M. Foster :—

I think it is extremely improper for the President of the R.S. to accept a position as a party politician. As a Unionist I should vote for him if I had a vote for Cambridge University, but for all that I think it is most lamentable that the Presidency of the Society should be dragged into party mud.

When I was President I refused to take the Presidency of the Sunday League, because of the division of opinion on the subject. Now we are being connected with the Victoria Institute, and sucked into the slough of politics.

These considerations weighed heavily with several both of the older and the younger members of the Society ; but the majority were indifferent to the dangers of the precedent. The Council could not discuss the matter ; they waited in vain for an official announcement of his election from the President, while he, as it turned out, expected them to broach the subject.

Various proposals were discussed ; but it seemed best that, as a preliminary to further action, an editorial article written by Huxley should be inserted in *Nature*, indicating what was felt by a section of the Society, and suggesting that resignation of one of the two offices was the right solution of the difficulty.

Finally, it seemed that perhaps, after all, a "masterly inactivity" was the best line of action. Without risk of an authoritative decision of the Society "the wrong way," out of personal regard for the President, the question would be solved for him by actual experience of work in the House of Commons, where he would doubtless discover that he must "renounce either science, or politics, or existence."

This campaign, however, against a principle, was carried on without any personal feeling. The perfect simplicity of the President's attitude would have disarmed the hottest

opponent, and indeed Huxley took occasion to write him the following letter, in reference to which he writes to Dr. Foster:—"I hate doing things in the dark and could not stand it any longer."

Dec. 1, 1887.

MY DEAR STOKES—When we met in the hall of the Athenæum on Monday evening I was on the point of speaking to you on a somewhat delicate topic; namely, my responsibility for the leading article on the Presidency of R.S. and politics which appeared a fortnight ago in *Nature*. But I was restrained by the reflection that I had no right to say anything about the matter without the consent of the Editor of *Nature*. I have obtained that consent, and I take the earliest opportunity of availing myself of my freedom.

I should have greatly preferred to sign the article, and its anonymity is due to nothing but my strong desire to avoid the introduction of any personal irrelevancies into the discussion of a very grave question of principle.

I may add that as you are quite certain to vote in the way that I think right on the only political questions which greatly interest me, my action has not been, and cannot be, in any way affected by political feeling.

And as there is no one of whom I have a higher opinion as a man of science — no one whom I should be more glad to serve under, and to support year after year in the Chair of the Society, and no one for whom I entertain feelings of more sincere friendship —I trust you will believe that, if there is a word in the article which appears inconsistent with these feelings, it is there by oversight, and is sincerely regretted.

During the thirty odd years we have known one another, we have often had stout battles without loss of mutual kindness. My chief object in troubling you with this letter is to express the hope that, whatever happens, this state of things may continue.—I am, yours very faithfully, T. H. HUXLEY.

P.S.—I am still of opinion that it is better that my authorship should not be officially recognised, but you are, of course, free to use the information I have given you in any way you may think fit.

To this the President returned a very frank and friendly reply; saying he had never dreamed of any incompatibility existing between the two offices, and urging that the Presidency ought not to constrain a man to give up his ordinary duties as a citizen. He concludes:—

And now I have stated my case as it appears to myself; let me assure you that nothing that has passed tends at all to diminish

my friendship towards you. My wife heard last night that the article was yours, and told me so. I rather thought it must have been written by some hot Gladstonian. It seems, however, that her informant was right. She wishes me to tell you that she replied to her informant that she felt quite sure that if you wrote it, it was because you thought it.

To which Huxley replied :—

I am much obliged for your letter, which is just such as I felt sure you would write.

Pray thank Mrs. Stokes for her kind message. I am very grateful for her confidence in my uprightness of intention.

We must agree to differ.

It may be needful for me and those who agree with me to place our opinions on record; but you may depend upon it that nothing will be done which can suggest any lack of friendship or respect for our President.

It will be seen from this correspondence and the letter to Sir J. Donnelly of July 15 (p. 168), that Huxley was a staunch Unionist. Not that he considered the actual course of English rule there ideal; his main point was that under the circumstances the establishment of Home Rule was a distinct betrayal of trust, considering that on the strength of Government promises, an immense number of persons had entered into contracts, had bought land, and staked their fortunes in Ireland, who would be ruined by the establishment of Home Rule. Moreover, he held that the right of self-preservation entitled a nation to refuse to establish at its very gates a power which could, and perhaps would, be a danger to its own existence. Of the capacity of the Irish peasant for self-government he had no high opinion, and what he had seen of the country, and especially the great central plain, in his frequent visits to Ireland, convinced him that the balance between subsistence and population would speedily create a new agrarian question, whatever political schemes were introduced. This was one of "the only political questions which interested him."

Towards the end of October he left London for Hastings, partly for his own, but still more for his wife's sake, as she was far from well. He was still busy with one or two Royal Society Committees, and came up to town occasionally to attend their meetings, especially those dealing with the

borings in the Delta, and with Antarctic exploration. Thus he writes :—

11 EVERSFIELD PLACE, HASTINGS,
Oct. 31, 1887.

MY DEAR FOSTER—We have been here for the last week, and are likely to be here for some time, as my wife, though mending, is getting on but slowly, and she will be as well out of London through beastly November. I shall be up on Thursday and return on Friday, but I do not want to be away longer, as it is lonesome for the wife.

I quite agree to what you propose on Committee, so I need not be there. Very glad to hear that the Council "very much applauded what we had done," and hope we shall get the £500.

I don't believe a word in increasing whale fishery, but scientifically, the Antarctic expedition would, or might be very interesting, and if the colonies will do their part, I think we ought to do ours.

You won't want me at that Committee either. Hope to see you on Thursday.—Ever yours, T. H. HUXLEY.

Hideous pen!

But he did not come up that Thursday. His wife was for a time too ill to be left, and he winds up his letter of November 2 to Dr. Foster with the reflection :—

Man is born to trouble as the sparks, etc.—but when you have come to my time of life you will say as I do—Lucky it is no worse.

November 6.—I am very glad to hear that the £500 is granted, and I will see to what is next to be done as soon as I can. Also I am very glad to find you don't want my valuable service on Council R.S. I repented me of my offer when I thought how little I might be able to attend.

One thing, however, afforded him great pleasure at this time. He writes on November 6 to his old friend, Sir J. Hooker :—

I write just to say what infinite satisfaction the award of the Copley Medal to you has given me. If you were not my dear old friend, it would rejoice me as a mere matter of justice—of which there is none too much in this "—— rum world," as Whitworth's friend called it.

To the reply that the award was not according to rule, inasmuch as it was the turn for the medal to be awarded in another branch of science, he rejoins :—

I had forgotten all about the business—but he had done nothing to deserve the Copley, and all I can say is that if the present award is contrary to law, the "law's a hass" as Mr. Bumble said. But I don't believe that it is.

He replies also on November 5 to a clerical correspondent who had written to him on the distinction between *shehretz* and *rehmes*, and accused him of "wilful blindness" in his theological controversy of 1886:—

Let me assure you that it is not my way to set my face against being convinced by evidence.

I really cannot hold myself to be responsible for the translators of the Revised Version of the O.T. If I had given a translation of the passage to which you refer on my own authority, any mistake would be mine, and I should be bound to acknowledge it. As I did not, I have nothing to admit. I have every respect for your and Mr. ——'s authority as Hebraists, but I have noticed that Hebrew scholars are apt to hold very divergent views, and before admitting either your or Mr. ——'s interpretation, I should like to see the question fully discussed.

If, when the discussion is concluded, the balance of authority is against the revised version, I will carefully consider how far the needful alterations may affect the substance of the one passage in my reply to Mr. Gladstone which is affected by it.

At present I am by no means clear that it will make much difference, and in no case will the main lines of my argument as to the antagonism between modern science and the Pentateuch be affected. The statements I have made are public property. If you think they are in any way erroneous I must ask you to take upon yourself the same amount of responsibility as I have done, and submit your objection to the same ordeal.

There is nothing like this test for reducing things to their true proportions, and if you try it, you will probably discover, not without some discomfort, that you really had no reason to ascribe wilful blindness to those who do not agree with you.

He was now preparing to complete his campaign of the spring on technical education by delivering an address to the Technical Education Association at Manchester on November 29, and looked forward to attending the anniversary meeting of the Royal Society on his way home next day, and seeing the Copley medal conferred upon his old friend, Sir J. Hooker. However, unexpected trouble befell him. First he was much alarmed about his wife, who had

been ill more or less ever since leaving Arolla. Happily it turned out that there was nothing worse than could be set right by a slight operation. But nothing had been done when news came of the sudden death of his second daughter on November 19. "I have no heart for anything just now," he writes; nevertheless, he forced himself to fulfil this important engagement at Manchester, and in the end the necessity of bracing himself for the undertaking acted on him as a tonic.

It is a trifle, perhaps, but a trifle significant of the disturbance of mind that could override so firmly fixed a habit, that the two first letters he wrote after receiving the news are undated; almost the only omission of the sort I have found in all his letters of the last twenty-five years of his life.

His daughter's long illness had left him without hope for months past, but this, as he confessed, did not mend matters much. In his letters to his two most intimate friends, he recalls her brilliant promise, her happy marriage, her "faculty for art, which some of the best artists have told me amounted to genius." But he was naturally reticent in these matters, and would hardly write of his own griefs unbidden even to old friends.

85 MARINA, ST. LEONARDS,
Nov. 21, 1887.

MY DEAR SPENCER—You will not have forgotten my bright girl Marian, who married so happily and with such bright prospects half a dozen years ago?

Well, she died three days ago of a sudden attack of pneumonia, which carried her off almost without warning. And I cannot convey to you a sense of the terrible sufferings of the last three years better than by saying that I, her father, who loved her well, am glad that the end has come thus. . . .

My poor wife is well nigh crushed by the blow. For though I had lost hope, it was not in the nature of things that she should.

Don't answer this—I have half a mind to tear it up—for when one is in a pool of trouble there is no sort of good in splashing other people.—Ever yours, T. H. HUXLEY.

As for his plans, he writes to Sir J. Hooker on November 21:—

I had set my heart on seeing you get the Copley on the 30th. In fact, I made the Manchester people, to whom I had made a promise to go down and address the Technical Education Association, change their day to the 29th for that reason.

I cannot leave them in the lurch after stirring up the business in the way I have done, and I must go and give my address. But I must get back to my poor wife as fast as I can, and I cannot face any more publicity than that which it would be cowardly to shirk just now. So I shall not be at the Society except in the spirit.—Ever yours, T. H. HUXLEY.

And again to Sir M. Foster :—

You cannot be more sorry than I am that I am going to Manchester, but I am not proud of chalking up "no popery" and running away—for all Evans' and your chaff—and, having done a good deal to stir up the Technical Education business and the formation of the Association, I cannot leave them in the lurch when they urgently ask for my services. . . .

The Delta business must wait till after the 30th. I have no heart for anything just now.

The letters following were written in answer to letters of sympathy.

85 MARINA, ST. LEONARDS,
Nov. 25, 1887.

MY DEAR MR. CLODD—Let me thank you on my wife's behalf and my own for your very kind and sympathetic letter.

My poor child's death is the end of more than three years of suffering on her part, and deep anxiety on ours. I suppose we ought to rejoice that the end has come, on the whole, so mercifully. But I find that even I, who knew better, hoped against hope, and my poor wife, who was unfortunately already very ill, is quite heart-broken. Otherwise, she would have replied herself to your very kind letter.

She has never yet learned the art of sparing herself, and I find it hard work to teach her.—Ever yours very faithfully,

T. H. HUXLEY.

In the same strain he writes to Dr. Dyster :—

Rationally we must admit that it is best so. But then, whatever Linnæus may say, man is not a rational animal—especially in his parental capacity.

85 MARINA, ST. LEONARDS,
Nov. 25, 1887.

MY DEAR KNOWLES—I really must thank you very heartily for your letter. It went to our hearts and did us good, and I know you will like to learn that you have helped us in this grievous time.

My wife is better, but fit for very little; and I do not let her write a letter even, if I can help it. But it is a great deal harder to keep her from doing what she thinks her duty than to get most other people to do what plainly is their duty.

With our kindest love and thanks to all of you—Ever, my dear Knowles, yours very faithfully, T. H. HUXLEY.

Yes, you are quite right about "loyal." I love my friends and hate my enemies, which may not be in accordance with the Gospel, but I have found it a good wearing creed for honest men.

The "Address on behalf of the National Association for the Promotion of Technical Education," first published in the ensuing number of *Science and Art*, and reprinted in *Collected Essays*, iii. 427-451, was duly delivered in Manchester, and produced a considerable effect.

He writes to Sir M. Foster, December 1 :—

I am glad I resisted the strong temptation to shirk the business. Manchester has gone solid for technical education, and if the idiotic London papers, instead of giving half a dozen lines of my speech, had mentioned the solid contributions to the work announced at the meeting, they would have enabled you to understand its importance.

. . . I have the satisfaction of having got through a hard bit of work, and am none the worse physically—rather the better for having to pull myself together.

And to Sir J. Hooker :—

85 MARINA, ST. LEONARDS,
Dec. 4, 1887.

MY DEAR HOOKER—$x = 8$, 6.30. I meant to have written to ask you all to put off the x till next Thursday, when I could attend, but I have been so bedevilled I forgot it. I shall ask for a bill of indemnity.

I was rather used up yesterday, but am picking up. In fact my Manchester journey convinced me that there was more stuff left than I thought for. I travelled 400 miles, and made a speech of fifty minutes in a hot, crowded room, all in about twelve hours, and was none the worse. Manchester, Liverpool, and Newcastle have now

gone in for technical education on a grand scale, and the work is practically done. *Nunc Dimittis!*

I hear great things of your speech at the dinner. I wish I could have been there to hear it. . . .

Of the two following letters, one refers to the account of Sir J. D. Hooker's work in connection with the award of the Copley medal; the other, to Hooker himself, touches a botanical problem in which Huxley was interested.

ST. LEONARDS, *Nov.* 25, 1887.

MY DEAR FOSTER— . . . I forget whether in the notice of Hooker's work you showed me there was any allusion made to that remarkable account of the Diatoms in Antarctic ice, to which I once drew special attention, but Heaven knows where?

Dyer perhaps may recollect all about the account in the *Flora Antarctica*, if I mistake not. I have always looked upon Hooker's insight into the importance of these things and their skeletons as a remarkable piece of inquiry—anticipative of subsequent deep sea work.

Best thanks for taking so much trouble about H——. Pray tell him if ever you write that I have not answered his letter only because I awaited your reply. He may think my silence uncivil. . . .—Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Dec. 29, 1887.

Where is the fullest information about distribution of Coniferæ? Of course I have looked at *Genera Pl.* and De Candolle.

I have been trying to make out whether structure or climate or paleontology throw any light on their distribution—and am drawing complete blank. Why the deuce are there no Conifers but *Podocarpus* and *Widringtonias* in all Africa south of the Sahara? And why the double deuce are about three-quarters of the genera huddled together in Japan and N. China?

I am puzzling over this group because the paleontological record is comparatively so good.

I am beginning to suspect that present distribution is an affair rather of denudation than migration.

Sequoia! Taxodium! Widringtonia! Araucaria! all in Europe, in Mesozoic and Tertiary.

The following letters to Mr. Herbert Spencer were written as sets of proofs of his Autobiography arrived.

That to Sir J. Skelton was to thank him for his book on *Maitland of Lethington*, the Scotch statesman of the time of Queen Mary.

Jan. 18, 1887.

(The first part of this letter is given on p. 151.)

MY DEAR SPENCER—I see that your proofs have been in my hands longer than I thought for. But you may have seen that I have been "starring" at the Mansion House. . . .

I am immensely tickled with your review of your own book. That is something most originally Spencerian. I have hardly any suggestions to make, except in what you say about the *Rattlesnake* work and my position on board.

Her proper business was the survey of the so-called "inner passage" between the Barrier Reef and the east coast of Australia; the New Guinea work was a *hors d'œuvre*, and dealt with only a small part of the southern coast.

Macgillivray was naturalist—I was actually Assistant-Surgeon and nothing else. But I was recommended to Stanley by Sir John Richardson, my senior officer at Haslar, on account of my scientific proclivities. But scientific work was no part of my duty. How odd it is to look back through the vista of years! Reading your account of me, I had the sensation of studying a fly in amber. I had utterly forgotten the particular circumstance that brought us together. Considering what wilful tykes we both are (you particularly), I think it is a great credit to both of us that we are firmer friends now than we were then. Your kindly words have given me much pleasure.

This is a deuce of a long letter to inflict upon you, but there is more coming. The other day a Miss ——, a very good, busy woman of whom I and my wife have known a little for some years, sent me a proposal of the committee of a body calling itself the London Liberty League (I think) that I should accept the position of one of three honorary something or others, you and Mrs. Fawcett being the other two.

Now you may be sure that I should be glad enough to be associated with you in anything; but considering the innumerable battles we have fought over education, vaccination, and so on, it seemed to me that if the programme of the League were wide enough to take us both for figure-heads, it must be so elastic as to verge upon infinite extensibility; and that one or other of us would be in a false position.

So I wrote to Miss —— to that effect, and the matter then dropped.

Misrepresentation is so rife in this world that it struck me I had better tell you exactly what happened.

On the whole, your account of your own condition is encouraging; not going back is next door to going forward. Anyhow, you have contrived to do a lot of writing.

We are all pretty flourishing, and if my wife does not get worn out with cooks falling ill and other domestic worries, I shall be content.

Now this really is the end.—Ever yours very truly,

T. H. HUXLEY.

4 MARLBOROUGH PLACE, LONDON, N.W.,
March 7, 1887.

MY DEAR SKELTON—Wretch that I am, I see that I have never had the grace to thank you for *Maitland of Lethington* which reached me I do not choose to remember how long ago, and which I read straight off with lively satisfaction.

There is a paragraph in your preface, which I meant to have charged you with having plagiarised from an article of mine, which had not appeared when I got your book. In that Hermitage of yours you are up to any Codesicobuddhistotelepathic dodge!

It is about the value of practical discipline to historians. Half of them know nothing of life, and still less of government and the ways of men.

I am quite useless, but have vitality enough to kick and scratch a little when prodded.

I am at present engaged on a series of experiments on the thickness of skin of that wonderful little wind-bag ——. The way that second-rate amateur poses as a man of science, having authority as a sort of papistical Scotch dominie, bred a minister, but stickit, really "rouses my corruption." What a good phrase that is. I am cursed with a lot of it, and any fool can strike ile.—Ever yours very faithfully, T. H. HUXLEY.[1]

Please remember me very kindly to Mrs. Skelton.

11 EVERSFIELD PLACE, HASTINGS,
Nov. 18, 1887.

MY DEAR SPENCER—I was very glad to get your letter this morning. I heard all about you from Hirst before I left London, now nearly a month ago, and I promised myself that instead of bothering you with a letter I would run over from here and pay you a visit.

[1] This letter is one of the twelve from T. H. H. already published by Sir John Skelton in his *Table Talk of Shirley*, p. 295 *sq.*

Unfortunately, my wife, who had been ill more or less ever since we left Arolla and came here on Clark's advice, had an attack one night, which frightened me a good deal, though it luckily turned out to arise from easily remediable causes.

Under these circumstances you will understand how I have not made my proposed journey to Brighton.

I am rejoiced to hear of your move. I believe in the skill of Dr. B. Potter and her understanding of the case more than I do in all the doctors and yourself put together. Please offer my respectful homage to that eminent practitioner.

You see people won't let me alone, and I have had to tell the Duke to "keep on board his own ship," as the Quaker said, once more. I seek peace, but do not ensue it.

Send any quantity of proofs, they are a good sign. By the way, we move to 85 Marina, St. Leonards, to-morrow.

Wife sends her kind regards.—Ever yours very faithfully,

T. H. HUXLEY.

85 MARINA, ST. LEONARDS,
Dec. 1887.

MY DEAR SPENCER—I have nothing to criticise in the enclosed except that the itineraries seem to me rather superfluous.

I am glad to find that you forget things that have happened to you as completely as I do. I should cut almost as bad a figure as "Sir Roger" if I were cross-examined about my past life.

Your allusion to sending me the proofs made me laugh by reminding me of a particularly insolent criticism with which I once favoured you: "No objection except to the whole."

It was some piece of diabolical dialectics, in which I could pick no hole, if the premises were granted—and even then could be questioned only by an ultra-sceptic!

Do you see that the American Association of Authors has adopted a Resolution, which is a complete endorsement of my view of the stamp-swindle?

We have got our operation over, and my wife is going on very well. Overmuch anxiety has been telling on me, but I shall throw it off.—Ever yours very faithfully, T. H. HUXLEY.

CHAPTER XII

1888

HUXLEY had returned to town before Christmas, for the house in St. John's Wood was still the rallying-point for the family, although his elder children were now married and dispersed. But he did not stay long. "Wife wonderfully better," he writes to Sir M. Foster on January 8, "self as melancholy as a pelican in the wilderness." He meant to have left London on the 16th, but his depressed condition proved to be the beginning of a second attack of pleurisy, and he was unable to start for Bournemouth till the 24th.

Here, however, his recovery was very slow. He was unable to come up to the first meeting of the *x* Club. "I trust," he writes, "I shall be able to be at the next *x*—but I am getting on very slowly. I can't walk above a couple of miles without being exhausted, and talking for twenty minutes has the same effect. I suppose it is all Anno Domini."

But he had a pleasant visit from one of the *x*, and writes :—

CASALINI, WEST CLIFF, BOURNEMOUTH,
Jan. 29, 1888.

MY DEAR HOOKER—Spencer was here an hour ago as lively as a cricket. He is going back to town on Tuesday to plunge into the dissipations of the Metropolis. I expect he will insist on you all going to Evans' (or whatever represents that place to our descendants) after the *x*.

Bellows very creaky—took me six weeks to get them mended last time, so I suppose I may expect as long now.—Ever yours very faithfully, T. H. HUXLEY.

As appears from the letters which follow, he had been busied with writing an article for the *Nineteenth Century*, for February, on the "Struggle for Existence,"[1] which on the one hand ran counter to some of Mr. Herbert Spencer's theories of society; and on the other, is noticeable as briefly enunciating the main thesis of his "Romanes Lecture" of 1893.

85 MARINA, ST. LEONARDS,
Dec. 13, 1887.

MY DEAR KNOWLES—I have to go to town to-morrow for a day, so that puts an end to the possibility of getting my screed ready for January. Altogether it will be better to let it stand over.

I do not know whence the copyright extract came, except that, as Putnam's name was on the envelope, I suppose they sent it.

Pearsall Smith's practice is a wonderful commentary on his theory. Distribute the contents of the baker's shop *gratis*—it will give people a taste for bread!

Great is humbug, and it will prevail, unless the people who do not like it hit hard. The beast has no brains, but you can knock the heart out of him.—Ever yours very truly, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Jan. 9, 1888.

MY DEAR DONNELLY—Here is my proof. Will you mind running your eye over it?

The article is long, and partly for that reason and partly because the general public wants principles rather than details, I have condensed the practical half.

H. Spencer and "Jus" will be in a white rage with me.—Ever yours very faithfully, T. H. HUXLEY.

To Professor Frankland, February 6:—

I am glad you like my article. There is no doubt it is rather like a tadpole, with a very big head and a rather thin tail. But the subject is a ticklish one to deal with, and I deliberately left a good deal suggested rather than expressed.

CASALINI, WEST CLIFF, BOURNEMOUTH,
Feb. 9, 1888.

MY DEAR DONNELLY—No! I don't think softening has begun yet—*vide* "Nature" this week.[2] I am glad you found the article

[1] *Coll. Ess.* ix. 195.

[2] *Nature* (xxxvii. 337) for February 9, 1888: review of his article in the *Nineteenth Century* on the "Industrial Struggle for Existence."

worth a second go. I took a vast of trouble (as the country folks say) about it. I am afraid it has made Spencer very angry—but he knows I think he has been doing mischief this long time.

Bellows to mend! Bellows to mend! I am getting very tired of it. If I walk two or three miles, however slowly, I am regularly done for at the end of it. I expect there has been more mischief than I thought for.

How about the Bill?—Ever yours, T. H. HUXLEY.

However, he and Mr. Spencer wrote their minds to each other on the subject, and as Huxley remarks with reference to this occasion, "the process does us both good, and in no way interferes with our friendship."

The letter immediately following, to Mr. Romanes, answers an enquiry about a passage quoted from Huxley's writings by Professor Schurman in his *Ethical Import of Darwinism.* This passage, made up of sentences from two different essays, runs as follows:—

It is quite conceivable that every species tends to produce varieties of a limited number and kind, and that the effect of natural selection is to favour the development of some of these, while it opposes the development of others along their predetermined line of modification.[1] A whale does not tend to vary in the direction of producing feathers, nor a bird in the direction of producing whalebone.[2]

"On the strength of these extracts" (writes Mr. Romanes), "Schurman represents you 'to presuppose design, since development takes place along certain predetermined lines of modification.' But as he does not give references, and as I do not remember the passages, I cannot consult the context, which I fancy must give a different colouring to the extracts."

4 MARLBOROUGH PLACE,
Jan. 5, 1888.

MY DEAR ROMANES—They say that liars ought to have long memories. I am sure authors ought to. I could not at first remember where the passage Schurman quotes occurs, but I did find it in the *Encyclopædia Britannica* article on "Evolution,"[1] reprinted in *Science and Culture*, p. 307.

But I do not find anything about the "whale" here. Neverthe-

[1] *Coll. Ess.* ii. 223.
[2] In "Mr. Darwin's Critics," 1871; *Coll. Ess.* ii. 181.

less I have a consciousness of having said something of the kind somewhere.[1]

If you look at the whole passage, you will see that there is not the least intention on my part to presuppose design.

If you break a piece of Iceland spar with a hammer, all the pieces will have shapes of a certain kind, but that does not imply that the Iceland spar was constructed for the purpose of breaking up in this way when struck. The atomic theory implies that of all possible compounds of A and B only those will actually exist in which the proportions of A and B by weight bear a certain numerical ratio. But it is mere arguing in a circle to say that the fact being so is evidence that it was designed to be so.

I am not going to take any more notice of the everlasting D——, as you appropriately call him, until he has withdrawn his slanders. . . .

Pray give him a dressing—it will be one of those rare combinations of duty and pleasure.—Ever yours very faithfully,

T. H. HUXLEY.

He was, moreover, constantly interested in schemes for the reform of the scientific work of the London University, and for the enlargement of the scope and usefulness of the Royal Society. As for the latter, a proposal had been made for federation with colonial scientific societies, which was opposed by some of his friends in the x Club; and he writes to Sir E. Frankland on February 3 :—

I am very sorry you are all against Evans' scheme. I am for it. I think it a very good proposal, and after all the talk, I do not want to see the Society look foolish by doing nothing.

You are a lot of obstructive old Tories, and want routing out. If I were only younger and less indisposed to any sort of exertion, I would rout you out finely !

With respect to the former, it had been proposed that medical degrees should be conferred, not by the university, but by a union of the several colleges concerned. He writes :—

4 MARLBOROUGH PLACE,
Jan. 11, 1888.

MY DEAR FOSTER—I send back the "Heathen Deutscheree's" (whose ways are dark) letter lest I forget it to-morrow.

Meanwhile perpend these two things :—

1. United Colleges propose to give just as good an examination

[1] In "Mr. Darwin's Critics," 1871; *Coll. Ess.* ii. 181.

and require as much qualification as the Scotch Universities. Why then give their degree a distinguishing mark?

2. "Academical distinctions" in medicine are all humbug. You are making a medical technical school at Cambridge—and quite right too. The United Colleges, if they do their business properly, will confer just as much, or as little "academical distinction" as Cambridge by their degree.

3. The Fellowship of the College of Surgeons is in every sense as much an "academical distinction" as the Masterships in Surgery or Doctorate of Medicine of the Scotch and English Universities.

4. You may as well cry for the moon as ask my colleagues in the Senate to meddle seriously with the Matriculation. They are possessed by the devil that cries continually, "There is only the Liberal education, and Greek and Latin are his prophets."

At Bournemouth he also applied himself to writing the Darwin obituary notice for the Royal Society, a labour of love which he had long felt unequal to undertaking. The MS. was finally sent off to the printer's on April 6, unlike the still longer unfinished memoir on Spirula, to which allusion is made here, among other business of the *Challenger* Committee, of which he was a member.

On February 12 he writes to Sir J. Evans:—

Spirula is a horrid burden on my conscience—but nobody could make head or tail of the business but myself.

That and Darwin's obituary are the chief subjects of my meditations when I wake in the night. But I do not get much "forrarder," and I am afraid I shall not until I get back to London.

BOURNEMOUTH, *Feb.* 14, 1888.

MY DEAR FOSTER—No doubt the Treasury will jump at any proposition which relieves them from further expense—but I cannot say I like the notion of leaving some of the most important results of the *Challenger* voyage to be published elsewhere than in the official record. . . .

Evans made a deft allusion to *Spirula*, like a powder between two dabs of jam. At present I have no moral sense, but it may awake as the days get longer.

I have been reading the *Origin* slowly again for the *n*th time, with the view of picking out the essentials of the argument, for the obituary notice. Nothing entertains me more than to hear people call it easy reading.

Exposition was not Darwin's *forte*—and his English is sometimes wonderful. But there is a marvellous dumb sagacity about him—

like that of a sort of miraculous dog—and he gets to the truth by ways as dark as those of the Heathen Chinee.

I am getting quite sick of all the "paper philosophers," as old Galileo called them, who are trying to stand upon Darwin's shoulders and look bigger than he, when in point of real knowledge they are not fit to black his shoes. It is just as well I am collapsed or I believe I should break out with a final "Für Darwin."

I will think of you when I get as far as the fossils. At present I am poking over *P. sylvestris* and *P. pinnata* in the intervals of weariness.

My wife joins with me in love to you both.—Ever yours very faithfully, T. H. HUXLEY.

Snow and cold winds here. Hope you are as badly off at Cambridge.

BOURNEMOUTH, *Feb.* 21, 1888.

MY DEAR FOSTER—We have had nothing but frost and snow here lately, and at present half a gale of the bitterest north-easter I have felt since we were at Florence is raging.[1]

I believe I am getting better, as I have noticed that at a particular stage of my convalescence from any sort of illness I pass through a condition in which things in general appear damnable and I myself an entire failure. If that is a sign of returning health you may look upon my restoration as certain.

If it is only Murray's speculations he wants to publish separately, I should say by all means let him. But the facts, whether advanced by him or other people, ought all to be in the official record. I agree we can't stir.

I scented the "goak." How confoundedly proud you are of it. In former days I have been known to joke myself.

I will look after the questions if you like. In my present state of mind I shall be a capital critic—on Dizzy's views of critics. . . . —Ever yours, T. H. H.

This year Huxley was appointed a Trustee of the British Museum, an office which he had held *ex officio* from 1883 to 1885, as President of the Royal Society.

This is referred to in the following letter of March 9:—

MY DEAR HOOKER—Having nothing to do plays the devil with doing anything, and I suppose that is why I have been so long about answering your letter.

There is nothing the matter with me now except want of strength.

[1] Similarly to Sir J. Evans on the 28th—"I get my strength back but slowly, and think of migrating to Greenland or Spitzbergen for a milder climate.

I am tired out with a three-mile walk, and my voice goes if I talk for any time. I do not suppose I shall do much good till I get into high and dry air, and it is too early for Switzerland yet. . . .

You see I was honoured and gloried by a trusteeship of the B.M.[1] These things, I suppose, normally come when one is worn-out. When Lowe was Chancellor of the Exchequer I had a long talk with him about the affairs of the Nat. Hist. Museum, and I told him that he had better put Flower at the head of it and make me a trustee to back him. Bobby no doubt thought the suggestion cheeky, but it is odd that the thing has come about now that I don't care for it, and desire nothing better than to be out of every description of bother and responsibility.

Have not Lady Hooker and you yet learned that a large country house is of all places the most detestable in cold weather? The neuralgia was a mild and kindly hint of Providence not to do it again, but I am rejoiced it has vanished.

Pronouns got mixed somehow.

With our kindest regards—Ever yours, T. H. HUXLEY.

More last words:—What little faculty I have has been bestowed on the obituary of Darwin for R.S. lately. I have been trying to make it an account of his intellectual progress, and I hope it will have some interest. Among other things I have been trying to set out the argument of the "Origin of Species," and reading the book for the *n*th time for that purpose. It is one of the hardest books to understand thoroughly that I know of, and I suppose that is the reason why even people like Romanes get so hopelessly wrong.

If you don't mind, I should be glad if you would run your eye over the thing when I get as far as the proof stage—Lord knows when that will be.

A few days later he wrote again on the same subject, after reading the obituary of Asa Gray, the first American supporter of Darwin's theory.

March 23.—I suppose Dana has sent you his obituary of Asa Gray.

The most curious feature I note in it is that neither of them seems to have mastered the principles of Darwin's theory. See the bottom of p. 19 and the top of p. 20. As I understand Darwin there is nothing "Anti-Darwinian" in either of the two doctrines mentioned.

[1] Replying on the 2nd to Sir John Evans' congratulations, he says:—"It is some months since Lord Salisbury made the proposal to me, and I was beginning to wonder what had happened—whether Cantuar had put his foot down for example, and objected to bad company."

Darwin has left the causes of variation and the question whether it is limited or directed by external conditions perfectly open.

The only serious work I have been attempting lately is Darwin's obituary. I do a little every day, but get on very slowly. I have read the life and letters all through again, and the *Origin* for the sixth or seventh time, becoming confirmed in my opinion that it is one of the most difficult books to exhaust that ever was written.

I have a notion of writing out the argument of the *Origin* in systematic shape as a sort of primer of *Darwinismus*. I have not much stuff left in me, and it would be as good a way of using what there is as I know of. What do you think?—Ever yours,

T. H. HUXLEY.

In reply to this Sir J. Hooker was inclined to make the biographer alone responsible for the confusion noted in the obituary of Asa Gray. He writes:—

March 27, 1888.

DEAR HUXLEY—Dana's Gray arrived yesterday, and I turned to pp. 19, 20. I see nothing Anti-Darwinian in the passages, and I do not gather from them that Gray did.

I did not follow Gray into his later comments on Darwinism, and I never read his *Darwiniana*. My recollection of his attitude after acceptance of the doctrine, and during the first few years of his active promulgation of it, is that he understood it clearly, but sought to harmonise it with his prepossessions, without disturbing its physical principles in any way.

He certainly showed far more knowledge and appreciation of the contents of the *Origin* than any of the reviewers and than any of the commentators, yourself excepted.

Latterly he got deeper and deeper into theological and metaphysical wanderings, and finally formulated his ideas in an illogical fashion.

. . . Be all this as it may, Dana seems to be in a muddle on p. 20, and quite a self-sought one.—Ever yours,

J. D. HOOKER.

The following is a letter of thanks to Mrs. Humphry Ward for her novel *Robert Elsmere*.

BOURNEMOUTH, *March* 15, 1888.

MY DEAR MRS. WARD—My wife thanked you for your book which you were so kind as to send us. But that was grace before meat, which lacks the "physical basis" of after-thanksgiving—and I am going to supplement it, after my most excellent repast.

I am not going to praise the charming style, because that was in the blood and you deserve no sort of credit for it. Besides, I should be stepping beyond my last. But as an observer of the human ant-hill—quite impartial by this time—I think your picture of one of the deeper aspects of our troubled time admirable.

You are very hard on the philosophers. I do not know whether Langham or the Squire is the more unpleasant—but I have a great deal of sympathy with the latter, so I hope he is not the worst.

If I may say so, I think the picture of Catherine is the gem of the book. She reminds me of her namesake of Siena—and would as little have failed in any duty, however gruesome. You remember Sodoma's picture.

Once more, many thanks for a great pleasure.

My wife sends her love.—Ever yours very faithfully,

T. H. HUXLEY.

Meanwhile, he had been making no progress towards health; indeed, was going slowly downhill. He makes fun of his condition when writing to condole with Mr. Spencer on falling ill again after the unwonted spell of activity already mentioned; but a few weeks later discovered the cause of his weakness and depression in an affection of the heart. This was not immediately dangerous, though he looked a complete wreck. His letters from April onwards show how he was forced to give up almost every form of occupation, and even to postpone his visit to Switzerland, until he had been patched up enough to bear the journey.

CASALINI, WEST CLIFF, BOURNEMOUTH,
March 9, 1888.

MY DEAR SPENCER—I am very sorry to hear from Hooker that you have been unwell again. You see if young men from the country will go plunging into the dissipations of the metropolis nemesis follows.

Until two days ago, the weathercocks never overstepped N. on the one side and E. on the other ever since you left. Then they went west with sunshine and most enjoyable softness—but next S. with a gale and rain—all ablowin' and agrowin' at this present.

I have nothing to complain of so long as I do nothing; but although my hair has grown with its usual rapidity I differ from Samson in the absence of a concurrent return of strength. Perhaps that is because a male hairdresser, and no Delilah, cut it last! But I waste Biblical allusions upon you.

My wife and Nettie, who is on a visit, join with me in best wishes.

Please let me have a line to say how you are—Gladstonianly on a post-card.—Ever yours very faithfully, T. H. HUXLEY.

BOURNEMOUTH, *April* 7, 1888.

MY DEAR FOSTER—"Let thy servant's face be white before thee." The obituary of Darwin went to Rix[1] yesterday! It is not for lack of painstaking if it is not worth much, but I have been in a bad vein for work of any kind, and I thought I should never get even this simple matter ended.

I have been bothered with præcordial uneasiness and intermittent pulse ever since I have been here, and at last I got tired of it and went home the day before yesterday to get carefully overhauled. Hames tells me there is weakness and some enlargement of the left ventricle, which is pretty much what I expected. Luckily the valves are all right.

I am to go and devote myself to coaxing the left v. wall to thicken *pro rata*—among the mountains, and to have nothing to do with any public functions or other exciting bedevilments. So the International Geological Congress will not have the pleasure of seeing its Honorary President in September. I am disgusted at having to break an engagement, but I cannot deny that Hames is right. At present the mere notion of the thing puts me in a funk.

I wish I could get out of the chair of the M.B.A. also. . . . I know that you and Evans and Dyer will do your best, but you are all eaten up with other occupations.

Just turn it over in your mind—there's a dear good fellow—just as if you hadn't any other occupations.

With which eminently reasonable and unselfish request believe me—Ever yours, T. H. H.

BOURNEMOUTH, *April* 10, 1888.

MY DEAR FOSTER—I send by this post the last—I hope for your sake and for that of the recording angel—of ——.[2] I agree to all Brady's suggestions.

With all our tinkering I feel inclined to wind up the affair after the manner of Mr. Shandy's summing [up] of the discussion about Tristram's breeches—"And when he has got 'em he'll look a beast in 'em."—Ever yours, T. H. H.

April 12. To the same:—

[1] Assistant Secretary of the Royal Society.

[2] The "Heathen Deutscheree" of p. 189. A paper of his, contributed to the Royal Society, had been under revision.

I am quite willing to remain at the M.B.A. till the opening. If Evans will be President I shall be happy.

—— is a very good man, but you must not expect too much of the "wild-cat" element, which is so useful in the world, in him.

I am disgusted with myself for letting everything go by the run, but there is no help for it. The least thing bowls me over just now.

CASALINI, WEST CLIFF, BOURNEMOUTH,
April 12, 1888.

MY DEAR HOOKER—I plead not guilty.[1] It was agreed at the last meeting that there should be none in April—I suppose by reason of Easter, so I sent no notice. This is what Frankland told me in his letter of the 2nd. However, I see you were present, so I can't make it out.

My continual absence makes me a shocking bad Treasurer, and I am sorry to say that things will be worse instead of better. Ever since this last pleuritic business I have been troubled with præcordial uneasiness. [After an account of his symptoms he continues] So I am off (with my wife) to Switzerland at the end of this month, and shall be away all the summer. We have not seen the Engadine and Tyrol yet, so we shall probably make a long circuit. It is a horrid nuisance to be exiled in this fashion. I have hardly been at home one month in the last ten. But it is of no use to growl.

Under these circumstances, would you mind looking after the *x* while I am away? There is nothing to do but to send the notices on Saturday previous to the meeting.

I am very grieved to hear about Hirst—though to say truth, the way he has held out for so long has been a marvel to me. The last news I had of Spencer was not satisfactory.

Eheu! the "Table Round" is breaking up. It's a great pity; we were such pleasant fellows, weren't we?—Ever yours,

T. H. HUXLEY.

CASALINI, WEST CLIFF, BOURNEMOUTH,
April 18, 1888.

MY DEAR FOSTER—I am cheered by your liking of the notice of Darwin. I read the "Life and Letters," and the "Origin," Krause's "Life," and some other things over again in order to do it. But I have not much go in me, and I was a scandalous long time pottering over the writing.

I have sent the proof back with a variety of interpolations. I would have brought the "Spirula" notes down here to see what I could do, but I felt pretty sure that if I brought two things I should

[1] In the matter of sending out no notices for a meeting of the *x* Club.

not do one. Nobody could do anything with it but myself. I will try what I can do when I go to town. How much time is there before the wind-up of the Challenger?

We go up to town Monday next, and I am thinking of being off the Monday following (Ap. 30). I have come to the same conclusion as yourself, that Glion would be better than Grindelwald. I should like very much to see you. Just drop me a line to say when you are likely to turn up.

Poor Arnold's death[1] has been a great shock—rather for his wife than himself—I mean on her account than his. I have always thought sudden death to be the best of all for oneself, but under such circumstances it is terrible for those who are left. Arnold told me years ago that he had heart disease. I do not suppose there is any likelihood of an immediate catastrophe in my own case. I should not go abroad if there were. Imagine the horror of leaving one's wife to fight all the difficulties of sudden Euthanasia in a Swiss hotel! I saw enough of that two years ago at Arolla.—Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
April 25, 1888.

MY DEAR HOOKER—All my beautiful Swiss plans are knocked on the head—at any rate for the present—in favour of horizontality and Digitalis here. The journey up on Monday demonstrated that travelling, at present, was impracticable.

Hames is sanguine I shall get right with rest, and I am quite satisfied with his opinion, but for the sake of my belongings he thinks it right to have Clark's opinion to fortify him.

It is a bore to be converted into a troublesome invalid even for a few weeks, but I comfort myself with my usual reflection on the chances of life, "Lucky it is no worse." Any impatience would have been checked by what I heard about Moseley this morning—that he has sunk into hopeless idiocy. A man in the prime of life! —Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
May 4, 1888.

MY DEAR HOOKER—Best thanks for your note and queries.

I remember hearing what you say about Darwin's father long ago, I am not sure from what source. But if you look at p. 20 of the *Life and Letters* you will see that D. himself says his father's mind "was not scientific." I have altered the passage so as to use these exact words.

I used "malice" rather in the French sense, which is more

[1] Matthew Arnold died suddenly of heart disease at Liverpool, where he had gone to meet his daughter on her return from America.

innocent than ours, but "irony" would be better if "malice" in any way suggests malignity. "Chaff" is unfortunately beneath the dignity of an R.S. obituary.

I am going to add a short note about Erasmus Darwin's views.

It is a great comfort to me that you like the thing. I am getting nervous over possible senility—63 to-day, and nothing of your evergreen ways about me.

I am decidedly mending, chiefly to all appearance by allowing myself to be stuffed with meat and drink like a Strasburg goose. I am also very much afraid that abolishing tobacco has had something to do with my amendment.

But I am mindful of your maxim—keep a tight hold over your doctor.—Ever yours very faithfully, T. H. HUXLEY.

P.S. 1.—Can't say I have sacrificed anything to penmanship, and am not at all sure about lucidity!

P.S. 2.—It *is* "Friday"—there is a dot over the i—reopened my letter to crow!

The following letter to Mr. Spencer is in answer to a note of condolence on his illness, in which the following passage occurs :—

I was grieved to hear of so serious an evil as that which [Hirst] named. It is very depressing to find one's friends as well as one's self passing more and more into invalid life.

Well, we always have one consolation, such as it is, that we have made our lives of some service in the world, and that, in fact, we are suffering from doing too much for our fellows. Such thoughts do not go far in the way of mitigation, but they are better than nothing.

4 MARLBOROUGH PLACE,
May 8, 1888.

MY DEAR SPENCER—I have been on the point of writing to you, but put it off for lack of anything cheerful to say.

After I had recovered from my pleurisy, I could not think why my strength did not come back. It turns out that there is some weakness and dilatation of the heart, but luckily no valvular mischief. I am condemned to the life of a prize pig—physical and mental idleness, and corporeal stuffing with meat and drink, and I am certainly improving under the regimen.

I am told I have a fair chance of getting all right again. But I take it as a pretty broad hint to be quiet for the rest of my days. At present I have to be very quiet, and I spend most of my time on my back.

You and I, my dear friend, have had our innings, and carry our

bats out while our side is winning. One could not reasonably ask for more. And considering the infinite possibilities of physical and moral suffering which beset us, I, for my part, am well pleased that things are no worse.—Ever yours very faithfully,

T. H. HUXLEY.

4 MARLBOROUGH PLACE, N.W.,
June 1, 1888.

MY DEAR KNOWLES—I have been living the life of a prize pig for the last six weeks—no exercise, much meat and drink, and as few manifestations of intelligence as possible, for the purpose of persuading my heart to return to its duty.

I am astonished to find that there is a kick left in me—even when your friend Krapotkin pitches into me without the smallest justification. *Vide* XIX., June, p. 820.

Just look at XIX., February, p. 168. I say, "*At the present time*, the produce of the soil does not suffice," etc.

I did not say a word about the capabilities of the soil if, as part and parcel of a political and social revolution on the grandest scale, we all took to spade husbandry.

As a matter of fact, I did try to find out a year or two ago, whether the soil of these islands could, under any circumstances, feed its present population with wheat. I could not get any definite information, but I understood Caird to think that it could.

In my argument, however, the question is of no moment. There must be some limit to the production of food by a given area, and there is none to population.

What a stimulus vanity is—nothing but the vain dislike of being thought in the wrong would have induced me to trouble myself or bore you with this letter. Bother Krapotkin!

I think his article very interesting and important nevertheless.

I am getting better, but very slowly.—Ever yours very truly,

T. H. HUXLEY.

In reply, Mr. Knowles begged him to come to lunch and a quiet talk, and further suggested, "as an *entirely unbiassed* person," that he ought to answer Krapotkin's errors in the *Nineteenth Century*, and not only in a private letter behind his back.

The answer is as follows :—

4 MARLBOROUGH PLACE, N.W.,
June 3, 1888.

MY DEAR KNOWLES—Your invitation is tantalising. I wish I could accept it. But it is now some six weeks that my excursions

have been limited to a daily drive. The rest of my time I spend on the flat of my back, eating, drinking, and doing absolutely nothing besides, except taking iron and digitalis.

I meant to have gone abroad a month ago, but it turned out that my heart was out of order, and though I am getting better, progress is slow, and I do not suppose I shall get away for some weeks yet.

I have neither brains nor nerves, and the very thought of controversy puts me in a blue funk!

My doctors prophesy good things, as there is no valvular disease, only dilatation. But for the present I must subscribe myself (from an editorial point of view)—Your worthless and useless and bad-hearted friend, T. H. HUXLEY.

The British Association was to meet at Plymouth this year; and Mr. W. F. Collier (an uncle of John Collier, his son-in-law) invited Huxley and any friend of his to be his guest at Horrabridge.

4 MARLBOROUGH PLACE,
June 13, 1888.

MY DEAR MR. COLLIER—It would have been a great pleasure to me to be your guest once more, but the Fates won't have it this time.

Dame Nature has given me a broad hint that I have had my innings, and, for the rest of my time, must be content to look on at the players.

It is not given to all of us to defy the doctors and go in for a new lease, as I am glad to hear you are doing. I declare that your open invitation to any friend of mine is the most touching mark of confidence I ever received. I am going to send it to my great ally Michael Foster, Secretary of the Royal Society. I do not know whether he has made any other arrangements, and I am not quite sure whether he and his wife are going to Plymouth. But I hope they may be able to accept, for you will certainly like them, and they will certainly like you. I will ask him to write directly to you to save time.

With very kind remembrances to Mrs. Collier—Ever yours very faithfully, T. H. HUXLEY.

I forgot to say that I am mending as fast as I can expect to do.

CHAPTER XIII

1888

IT was not till June 23 that Huxley was patched up sufficiently by the doctors for him to start for the Engadine. His first stage was to Lugano; the second by Menaggio and Colico to Chiavenna; the third to the Maloja. The summer visitors who saw him arrive so feeble that he could scarcely walk a hundred yards on the level, murmured that it was a shame to send out an old man to die there. Their surprise was the greater when, after a couple of months, they saw him walking his ten miles and going up two thousand feet without difficulty. As far as his heart was concerned, the experiment of sending him to the mountains was perfectly justified. With returning strength he threw himself once more into the pursuit of gentians, being especially interested in their distribution and hybridism, and the possibility of natural hybrids explaining the apparent connecting links between species. No doubt, too, he felt some gratification in learning from his friend Mr. (now Sir W.) Thiselton Dyer, that the results he had already obtained in pursuing this hobby had been of real value:—

> Your important paper "On Alpine Gentians" (writes the latter) has begun to attract the attention of botanists. It has led Baillon, who is the most acute of the French people, to make some observations of his own.

At the Maloja he stayed twelve weeks, but it was not until nearly two months had elapsed that he could write of any decided improvement, although even then his anticipations for the future were of the gloomiest. The "secret"

alluded to in the following letter is the destined award to him of the Copley medal :—

HOTEL KURSAAL, MALOJA,
OBER ENGADINE, *Aug.* 17, 1888.

MY DEAR FOSTER—I know you will be glad to hear that, at last, I can report favourably of my progress. The first six weeks of our stay here the weather was cold, foggy, wet, and windy—in short, everything that it should not be. If the hotel had not been as it is, about the most comfortable in Switzerland, I do not know what I should have done. As it was, I got a very bad attack of "liver," which laid me up for ten days or so. A Brighton doctor—Bluett by name, and well up to his work—kindly looked after me.

With the early days of August the weather changed for the better, and for the last fortnight we have had perfect summer—day after day. I soon picked up my walking power, and one day got up to Lake Longhin, about 2000 feet up. That was by way of an experiment, and I was none the worse for it, but usually my walks are of a more modest description. To-day we are all clouds and rain, and my courage is down to zero, with præcordial discomfort. It seems to me that my heart is quite strong enough to do all that can reasonably be required of it—if all the rest of the machinery is in good order, and the outside conditions are favourable. But the poor old pump cannot contend with grit or want of oil anywhere.

I mean to stay here as long as I can; they say it is often very fine up to the middle of September. Then we shall migrate lower, probably on the Italian side, and get home most likely in October. But I really am very much puzzled to know what to do.

My wife has not been very well lately, and Ethel has contrived to sprain her ankle at lawn-tennis. Collier has had to go to Naples, but we expect him back in a few days.

With our united love to Mrs. Foster and yourself—Ever yours,
T. H. HUXLEY.

I was very pleased to hear of a secret my wife communicated to me. So long as I was of any use, I did not care much about having the fact recognised, but now that I am used up I like the feather in my cap. "Fuimus." Let us have some news of you.

Sir M. Foster, who was kept in England by the British Association till September 10, wrote that he was going abroad for the rest of September, and proposed to spend some time at Menaggio, whence he hoped to effect a meeting. He winds up with a jest at his recent unusual occupation :—"I have had no end of righteousness accounted to me for

helping to entertain Bishops at Cambridge." Hence the postscript in reply :—

HÔTEL KURSAAL, MALOJA,
Sept. 2, 1888.

MY DEAR FOSTER—A sharp fall of snow has settled our minds, which have been long wavering about future plans, and we leave this for Menaggio, Hotel Vittoria, on Thursday next, 6th.[1]

All the wiseacres tell us that there are fresher breezes (vento di Lecco) at Menaggio than anywhere else in the Como country, and at anyrate we are going to try whether we can exist there. If it does not answer, we will leave a note for you there to say where we are gone. It would be very jolly to forgather.

I am sorry to leave this most comfortable of hotels, but I do not think that cold would suit either of us. I am marvellously well so long as I am taking sharp exercise, and I do my nine or ten miles without fatigue. It is only when I am quiet that I know that I have a heart.

I do not feel at all sure how matters may be 4000 feet lower, but what I have gained is all to the good in the way of general health. In spite of all the bad weather we have had, I have nothing but praise for this place—the air is splendid, excellent walks for invalids, capital drainage, and the easiest to reach of all places 6000 feet up.

My wife sends her love, and thanks Mrs. Foster for her letter, and looks forward to meeting her.—Ever yours, T. H. HUXLEY.

Wash yourself clean of all that episcopal contamination or you may infect me!

But adverse circumstances prevented the meeting.

HOTEL KURSAAL, MALOJA,
Sept. 24, 1888.

MY DEAR FOSTER—As ill luck would have it, we went over to Pont Resina to-day (for the first time), and have only just got back (5.30). I have just telegraphed to you.

All our plans have been upset by the Föhn wind, which gave us four days' continuous downpour here—upset the roads, and flooded the Chiavenna-Colico Railway. We hear that the latter is not yet repaired.

I was going to write to you at the Vittoria, but thought you could have hardly got there yet. We took rooms there a week ago, and then had to countermand them. If there are any letters kicking about for us, will you ask them to send them on?

By way of an additional complication my poor wife gave herself an unlucky strain this morning, and even if the railway is mended I

[1] He did not ultimately leave till the 22nd.

do not think she will be fit to travel for two or three days. We are very disappointed. What is to be done?

I am wonderfully better. So long as I am taking active exercise and the weather is dry, I am quite comfortable, and only discover that I have a heart when I am kept quiet by bad weather or get my liver out of order. Here I can walk nine or ten miles up hill and down dale without difficulty or fatigue. What I may be able to do elsewhere is doubtful.—Ever yours, T. H. HUXLEY.

It would do you and Mrs. Foster a great deal of good to come up here. Not out of your way at all! Oh dear no!

ZÜRICH, *Oct.* 4, 1888.

MY DEAR FOSTER—I should have written to you at Stresa, but I had mislaid your postcard, and it did not turn up till too late.

We made up our minds after all that we would as soon not go down to the Lakes—where the ground would be drying up after the inundations—so we went the other way over the Julier to Tiefenkasten, and from T. to Ragatz, where we stayed a week. Ragatz was hot and steamy at first—cold and steamy afterwards—but earlier in the season, I should think, it would be pleasant.

Last Monday we migrated here, and have had the vilest weather until to-day. All yesterday it rained cats and dogs.

To-day we are off to Neuhausen (Schweitzerhof) to have a look at the Rhine falls. If it is pleasant we may stop there a few days. Then we go to Stuttgart, on our way to Nuremberg, which neither of us have seen. We shall be at the "Bavarian Hotel," and a letter will catch us there, if you have anything to say, I daresay up to the middle of the month. After that Frankfort, and then home.

We do not find long railway journeys very good for either of us, and I am trying to keep within six hours at a stretch.

I am not so vigorous as I was at Maloja, but still infinitely better than when I left England.

I hope the mosquitoes left something of you in Venice. When I was there in October there were none!

My wife joins with me in love to Mrs. Foster and yourself.—Ever yours very faithfully, T. H. HUXLEY.

Some friendly chaff in Sir M. Foster's reply to the latter contains at least a real indication of the way in which Huxley became the centre of the little society at the Maloja:—

You may reflect that you have done the English tourists a good service this summer. At most *table d'hôtes* in the Lakes I overheard people talking about the joys of Maloja, and giving themselves great airs on account of their intimacy with "Professor Huxley"!!

But indeed he made several friends here, notably one in an unexpected quarter. This was Father Steffens, Professor of Palæography in Freiburg University, resident Catholic priest at Maloja in the summer, with whom he had many discussions, and whose real knowledge of the critical questions confronting Christian theology he used to contrast with the frequent ignorance and occasional rudeness of the English representatives of that science who came to the hotel.

A letter to Mr. Spencer from Ragatz shows him on his return journey :—

In fact, so long as I was taking rather sharp exercise in sunshine I felt quite well, and I could walk as well as any time these ten years. It needed damp cold weather to remind me that my pumping apparatus was not to be depended upon under unfavourable conditions. Four thousand feet descent has impressed that fact still more forcibly upon me, and I am quite at sea as to what it will be best to do when we return. Quite certainly, however, we shall not go to Bournemouth. I like the place, but the air is too soft and moist for either of us.

I should be very glad if we could be within reach of you and help to cheer you up, but I cannot say anything definite at present about our winter doings. . . .

My wife sends her kindest regards. She is much better than when we left, which is lucky for me, as I have no mind, and could not make it up if I had any. The only vigour I have is in my legs, and that only when the sun shines.—Ever yours, T. H. HUXLEY.

A curious incident on this journey deserves recording, as an instance of a futile "warning." On the night of October 6-7, Huxley woke in the night and seemed to hear an inward voice say, "Don't go to Stuttgart and Nuremberg; go straight home." All he did was to make a note of the occurrence and carry out his original plan, whereupon nothing happened.

The following to his youngest daughter, who had gone back earlier from the Maloja, refers to her success in winning the prize for modelling at the Slade School of Art.

SCHWEITZERHOF, NEUHAUSEN,
Oct. 7, 1888.

DEAREST BABS—I will sit to you like "Pater on a monument smiling at grief" for the medallion. As to the photographs, I will

try to get them done to order either at Stuttgart or Nuremberg, if we stay at either place long enough. But I am inclined to think they had better be done at home, and then you could adjust the length of the caoutchouc visage to suit your artistic convenience.

We have been crowing and flapping our wings over the medal and trimmings. The only thing I lament is that "your father's influence" was not brought to bear; there is no telling what you might have got if it had been. Thoughtless—very!!

So sorry we did not come here instead of stopping at Ragatz. The falls are really fine, and the surrounding country a wide table-land, with the great snowy peaks of the Oberland on the horizon. Last evening we had a brilliant sunset, and the mountains were lighted up with the most delicate rosy blush you can imagine.

To-day it rains cats and dogs again. You will have seen in the papers that the Rhine and the Aar and the Rhone and the Arve are all in flood. There is more water here in the falls than there has been these ten years. However, we have got to go, as the hotel shuts up to-morrow, and there seems a good chance of reaching Stuttgart without water in the carriage.

Long railway journeys do not seem to suit either of us, and we have fixed the maximum at six hours. I expect we shall be home sometime in the third week of this month.

Love to Hal and anybody else who may be at home.—Ever your PATER.

4 MARLBOROUGH PLACE,
Oct. 20, 1888.

MY DEAR FOSTER—We got back on Thursday, and had a very good passage, and took it easy by staying the night at Dover. The "Lord Warden" gave us the worst dinner we have had for four months, at double the price of the good dinners. I wonder why we cannot manage these things better in England.

We are both very glad to be at home again, and trust we may be allowed to enjoy our own house for a while. But, oh dear, the air is not Malojal! not even at Hampstead, whither I walked yesterday, and the pump labours accordingly.

I found the first part of the fifth edition of the Text-book among the two or three cwt. of letters and books which had accumulated during four months. Gratulire!

By the way, S. K. has sent me some inquiry about Examinations, which I treat with contempt, as doubtless you have a duplicate.—Ever yours very faithfully, T. H. HUXLEY.

On October 25 he announces his return to Sir Joseph Hooker, and laments his loss of vigour at the sea-level:—

Hames won't let me stay here in November, and I think we shall go to Brighton. Unless on the flat of my back, in bed, I shall not have been at home a month all this year.

I have been utterly idle. There was a lovely case of hybridism, *Gentiana lutea* and *G. punctata*, in a little island in the lake of Sils; but I fell ill and was confined to bed just after I found it out. It would be very interesting if somebody would work out Distribution five miles round the Maloja as a centre. There are the most curious local differences.

You asked me to send you a copy of my obituary of Darwin. So I put one herewith, though no doubt you have seen it in *Proc. R. S.*

I should like to know what you think of xvii-xxii. If ever I am able to do anything again I will enlarge on these heads.

In these pages of the Obituary Notice (*Proc. Roy. Soc.* XLIV., No. 269) he endeavours

to separate the substance of the theory from its accidents, and to show that a variety, not only of hostile comments, but of friendly would-be improvements lose their *raison d'être* to the careful student. . . .

It is not essential to Darwin's theory that anything more should be assumed than the facts of heredity, variation, and unlimited multiplication; and the validity of the deductive reasoning as to the effect of the last (that is, of the struggle for existence which it involves) upon the varieties resulting from the operation of the former. Nor is it essential that one should take up any particular position in regard to the mode of variation, whether, for example, it takes place *per saltum* or gradually; whether it is definite in character or indefinite. Still less are those who accept the theory bound to any particular views as to the causes of heredity or of variation.

The remaining letters of the year trace the gradual bettering of health, from the "no improvement" of October to the almost complete disappearance of bad symptoms in December. He had renounced Brighton, which he detested, in favour of Eastbourne, where the keen air of the downs and the daily walk over Beachy Head acted as a tolerable substitute for the Alps. Though he would not miss the anniversary meeting of the Royal Society, when he was to receive the Copley medal, one more link binding him to his old friend Hooker, he did not venture to stay for the dinner in the evening.

This autumn also he resigned his place on the board of Governors of Eton College. "I think it must be a year and a half," he writes, "since I attended a meeting, and I am not likely to do better in the future."

4 MARLBOROUGH PLACE,
Oct. 28, 1888.

MY DEAR HOOKER—Best thanks for your suggestion about the cottage, viz. "that before you decide on Brighton Mrs. Huxley should come down and look at the cottage below my house" at Sunningdale, but I do not see my way to adopting it. A house, however small, involves servants and ties one to one place. The conditions that suit me do not seem to be found anywhere but in the high Alps, and I can't afford to keep a second house in the country and pass the summer in Switzerland as well.

We are going to Brighton (not because we love it, quite t'other) on account of the fine weather that is to be had there in November and December. We shall be back for some weeks about Christmas, and then get away somewhere else—Malvern possibly—out of the east winds of February and March.

I do not like this nomadic life at all, but it appears to be Hobson's choice between that and none.

I am sorry to hear you are troubled by your ears. I am so deaf that I begin to fight shy of society. It irritates me not to hear; it irritates me still more to be spoken to as if I were deaf, and the absurdity of being irritated on the last ground irritates me still more.

I wish you would start that business of giving a competent young botanist with good legs £100 to go and study distribution in the Engadine—from the Maloja as centre—in a circle of a radius of eight or ten miles. The distribution of the four principal conifers, Arolla, pine larch, mountain pine and spruce, is most curious, the why and wherefore nowise apparent.

I am very sorry I cannot be at *x* on Thursday, but they won't let me be out at night at present.—Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
Oct. 28, 1888.

MY DEAR FOSTER—No fear of my trying to stop in London. Hames won't have it. He came and overhauled me the other day. As I expected, the original mischief is just as it was. One does not get rid either of dilatation or its results at my time of life. The only thing is to keep the pipes clear by good conditions of existence.

After endless discussion we have settled on Brighton for

November and December. It is a hateful place to my mind, but there is more chance of sunshine there (at this time) than anywhere else. We shall come up for a week or two on this side of Christmas, and then get away somewhere else out of the way of the east winds of February and March.

I do not think that the Hazlemere country would do for us, nor indeed any country place so long as we cannot regularly set up house.

Heaven knows I don't want to bother about anything at present. But I should like to convince —— that he does not yet understand the elements of [his subject]. What a copious inkspilling cuttlefish of a writer he is!—Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE, LONDON, N.W.,
Nov. 2, 1888.

MY DEAR SKELTON—Best thanks for the second volume of *Maitland of Lethington.* I have been in the Engadine for the last four months, trying to repair the crazy old "home I live in," and meeting with more success than I hoped for when I left home.

Your volume turned up amidst a mountain of accumulated books, papers, and letters, and I can only hope it has not been too long without acknowledgment.

I have been much interested in your argument about the "Casket letters." The comparison of Crawford's deposition with the Queen's letter leaves no sort of doubt that the writer of one had the other before him; and under the circumstances I do not see how it can be doubted that the Queen's letter is forged.

But though thus wholly agreeing with you in substance, I cannot help thinking that your language on p. 341 may be seriously pecked at.

My experience of reporters leads me to think that there would be no discrepancy at all comparable to that between the two accounts, and I speak from the woeful memories of the many Royal Commissions I have wearied over. The accuracy of a good modern reporter is really wonderful.

And I do not think that "the two documents were drawn by the same hand." I should say that the writer of the letter had Crawford's deposition before him, and made what he considered improvements here and there.

You will say this letter is like Falstaff's reckoning, with but a pennyworth of thanks to this monstrous quantity of pecking.

But the gratitude is solid and the criticism mere two dimension stuff. It is a charming book.

With kind remembrances to Mrs. Skelton—Ever yours very faithfully, T. H. HUXLEY.

10 SOUTHCLIFF TERRACE, EASTBOURNE,
Nov. 9, 1888.

MY DEAR FOSTER—We came here on Tuesday, on which day, by ill luck, the east wind also started, and has been blowing half a gale ever since. We are in the last house but one to the west, and as high up as we dare go—looking out on the sea. The first day we had to hold on to our chairs to prevent being blown away in the sitting-room, but we have hired a screen and can now croon over the fire without danger.

A priori, the conditions cannot be said to have been promising for two people, one of whom is liable to bronchitis and rheumatism and the other to pleurisy, but, as I am so fond of rubbing into Herbert Spencer, *a priori* reasonings are mostly bosh, and we are thriving.

With three coats on I find the air on Beachy Head eminently refreshing, and there is so much light in the southern quarter just now, that we confidently hope to see the sun once more in the course of a few days.

As I told you in my official letter, I am going up for the 30th. But I am in a quandary about the dinner, partly by reason of the inevitable speech, and partly the long sitting. I should very much like to attend, and I think I could go through with it. On the other hand, my wife declares it would be very imprudent, and I am not quite sure she is wrong. I wish you would tell me exactly what you think about the matter.

The way I pick up directly I get into good air makes me suspect myself of malingering, and yet I certainly had grown very seedy in London before we left.—Ever yours, T. H. HUXLEY.

10 SOUTHCLIFF TERRACE, EASTBOURNE,
Nov. 13, 1888.

MY DEAR FOSTER—We are very sorry to hear about Michael Junior.[1] *Experto crede;* of all anxieties the hardest to bear is that about one's children. But considering the way you got off yourself and have become the hearty and bucolic person you are, I think you ought to be cheery. Everybody speaks well of the youngster, and he is bound to behave himself well and get strong as swiftly as possible.

Though very loth, I give up the dinner. But unless I am on my back I shall turn up at the meeting. I think that is a compromise very creditable to my prudence.

[1] Sir M. Foster's son was threatened with lung trouble, and was ordered to live abroad. He proposed to carry his medical experience to the Maloja and practise there during the summer. Huxley offered to give him some introductions.

Though it is blowing a gale of wind from S.W. to-day there is real sunshine, and it is fairly warm. I am very glad we came here instead of that beastly Brighton.—Ever yours very faithfully,

T. H. HUXLEY.

10 SOUTHCLIFF TERRACE, EASTBOURNE,
Nov. 15, 1888.

MY DEAR EVANS—I am very sorry to have missed you. I told my doctor that while the weather was bad it was of no use to go away, and when it was fine I might just as well stop at home; but he did not see the force of my reasoning, and packed us off here.

The award of the Copley is a kindness I feel very much. . . .

The Congress[1] seems to have gone off excellently. I consider that my own performance of the part of dummy was distinguished.

So the Lawes business is fairly settled at last! "Lawes Deo," as the Claimant might have said. But the pun will be stale, as you doubtless have already made all possible epigrams and punnigrams on the topic.

My wife joins with me in kindest regards to Mrs. Evans and yourself. If Mrs. Evans had only come up to the Maloja, she would have had real winter and no cold.—Ever yours very faithfully,

T. H. HUXLEY.

10 SOUTHCLIFF TERRACE, EASTBOURNE,
Nov. 15, 1888.

MY DEAR HOOKER—You would have it that the R.S. broke the law in giving you the Copley, and they certainly violated custom in giving it to me the year following. Who ever heard of two biologers getting it one after another? It is very pleasant to have our niches in the Pantheon close together. It is getting on for forty years since we were first "acquent," and considering with what a very considerable dose of tenacity, vivacity, and that glorious firmness (which the beasts who don't like us call obstinacy) we are both endowed, the fact that we have never had the shadow of a shade of a quarrel is more to our credit than being ex-Presidents and Copley medallists.

But we have had a masonic bond in both being well salted in early life. I have always felt I owed a great deal to my acquaintance with the realities of things gained [in] the old Rattlesnake.

I am getting on pretty well here, though the weather has been mostly bad. All being well I shall attend the meeting of the Society on the 30th, but not the dinner. I am very sorry to miss the latter, but I dare not face the fatigue and the chances of a third dose of pleurisy.

[1] The International Geological Congress, at which he was to have presided.

My wife sends kindest regards and thanks for your congratulations.—Ever yours very faithfully, T. H. HUXLEY.

10 SOUTHCLIFF TERRACE, EASTBOURNE,
Nov. 17, 1888.

MY DEAR FLOWER,— . . . Many thanks for taking my troublesomeness in good part. My friend will be greatly consoled to know that you have the poor man "in your eye." Schoolmaster, naturalist, and coal merchant used to be the three refuges for the incompetent. Schoolmaster is rapidly being eliminated, so I suppose the pressure on Natural History and coals will increase.

I am glad you have got the Civil Service Commissioners to listen to common sense. I had an awful battle with them (through the Department) over Newton, who is now in your paleontological department. If I recollect rightly, they examined him *inter alia* on the working of the Poor Laws!

The Royal Society has dealt very kindly with me. They patted me on the back when I started thirty-seven years ago, and it was a great encouragement. They give me their best, now that my race is run, and it is a great consolation. At the far end of life all one's work looks so uncommonly small, that the good opinion of one's contemporaries acquires a new value.

We have a summer's day, and I am writing before an open window! Yesterday it blew great guns.—Ever yours very faithfully,
T. H. HUXLEY.

The following letter to Lady Welby, the point of which is that to be "morally convinced" is not the same thing as to offer scientific proof, refers to an article in the *Church Quarterly* for October called "Truthfulness in Science and Religion," evoked by Huxley's *Nineteenth Century* article on "Science and the Bishops."

Nov. 27, 1888.

DEAR LADY WELBY—Many thanks for the article in the *Church Quarterly*, which I return herewith. I am not disposed to bestow any particular attention upon it; as the writer, though evidently a fair-minded man, appears to me to be entangled in a hopeless intellectual muddle, and one which has no novelty. Christian beliefs profess to be based upon historical facts. If there was no such person as Jesus of Nazareth, and if His biography given in the Gospels is a fiction, Christianity vanishes.

Now the inquiry into the truth or falsehood of a matter of history is just as much a question of pure science as the inquiry into the truth or falsehood of a matter of geology, and the value of

evidence in the two cases must be tested in the same way. If any one tells me that the evidence of the existence of man in the miocene epoch is as good as that upon which I frequently act every day of my life, I reply that this is quite true, but that it is no sort of reason for believing in the existence of miocene man.

Surely no one but a born fool can fail to be aware that we constantly, and in very grave conjunctions, are obliged to act upon extremely bad evidence, and that very often we suffer all sorts of penalties in consequence. And surely one must be something worse than a born fool to pretend that such decision under the pressure of the enigmas of life ought to have the smallest influence in those judgments which are made with due and sufficient deliberation. You will see that these considerations go to the root of the whole matter. I regret that I cannot discuss the question more at length and deal with sundry topics put forward in your letter. At present writing is a burden to me.

A letter to Professor Ray Lankester mixes grave and gay in a little homily, edged by personal experience, on the virtues and vices of combativeness.

10 SOUTHCLIFF, EASTBOURNE,
Dec. 6, 1888.

I think it would be a very good thing both for you and for Oxford if you went there. Oxford science certainly wants stirring up, and notwithstanding your increase in years and wisdom, I think you would bear just a little more stoning[1] down, so that the conditions for a transfer of energy are excellent!

Seriously, I wish you would let an old man, who has had his share of fighting, remind you that battles, like hypotheses, are not to be multiplied beyond necessity. Science might say to you as the Staffordshire collier's wife said to her husband at the fair, "Get thee foighten done and come whoam." You have a fair expectation of ripe vigour for twenty years; just think what may be done with that capital.

No use to *tu quoque* me. Under the circumstances of the time, warfare has been my business and duty.—Ever yours very faithfully,

T. H. HUXLEY.

Two more letters of the year refer to the South Kensington examinations, for which Huxley was still nominally responsible. As before, we see him reluctant to sign the report upon papers which he had not himself examined; yet

[1] *i.e.* "holystoning," as the decks of a man-of-war.

at the same time doing all that lay in his power to assist by criticising the questions and thinking out the scheme of teaching on which the examination was to be based. He replies to some proposed changes in a letter to Sir M. Foster of December 12:—

I am very sorry I cannot agree with your clients about the examination. They should recollect the late Master of Trinity's aphorism that even the youngest of us is not infallible.

I know exactly upon what principles I am going, and so far as I am at present informed that advantage is peculiar to my side. Two points I am quite clear about—one is the exclusion of *Amphioxus*, and the other the retention of so much of the Bird as will necessitate a knowledge of Sauropsidan skeletal characters and the elements of skeletal homologies in skull and limbs.

I have taken a good deal of pains over drawing up a new syllabus —including dogfish—and making room for it by excluding *Amphioxus* and all of bird except skeleton. I have added Lamprey (cranial and spinal skeleton, *not* face cartilages), so that the intelligent student may know what a notochord means before he goes to embryology. I have excluded *Distoma* and kept *Helix*.

The Committee must now settle the matter. I have done with with it.

On December 27 he writes:—

I have been thinking over the Examinership business without coming to any very satisfactory result. The present state of things is not satisfactory so far as I am concerned. I do not like to appear to be doing what I am not doing.

—— would of course be the successor indicated, if he had not so carefully cut his own throat as an Examiner. . . . He would be bringing an action against the Lord President before he had been three years in office! . . . As I told Forster, when he was Vice-President, the whole value of the Exr. system depends on the way the examiners do their work. I have the gravest doubt about —— steadily plodding through the disgustful weariness of it as you and I have done, or observing any regulation that did not suit his fancy.

With this may be compared the letter of May 19, 1889, to Sir J. Donnelly, when he finally resolved to give up the "sleeping partnership" in the examination.

His last letter of the year was written to Sir J. Hooker, when transferring to him the "archives" of the *x* Club, as the new Treasurer.

4 MARLBOROUGH PLACE,
Dec. 29, 1888.

MY DEAR HOOKER—All good wishes to you and yours, and many of 'em.

Thanks for the cheque. You are very confiding to send it without looking at the account. But I have packed up the "Archives," which poor dear Busk handed over to me, and will leave them at the Athenæum for you. Among them you will find the account book. There are two or three cases, when I was absent, in which the names are not down. I have no doubt Frankland gave them to me by letter, but the book was at home and they never got set down. *Peccavi!*

I have been picking up in the most astonishing way during the last fortnight or three weeks at Eastbourne. My doctor, Hames, carefully examined my heart yesterday, and told me that though some slight indications were left, he should have thought nothing of them if he had not followed the whole history of the case. With fresh air and exercise and careful avoidance of cold and night air I am to be all right again in a few months.

I am not fond of coddling; but as Paddy gave his pig the best corner in his cabin—because "shure, he paid the rint"—I feel bound to take care of myself as a household animal of value, to say nothing of any other grounds. So, much as I should like to be with you all on the 3rd, I must defer to the taboo.

The wife got a nasty bronchitic cold as soon as she came up. She is much better now. But I shall be glad to get her down to Eastbourne again.

Except that, we are all very flourishing, as I hope you are.—Ever yours very faithfully, T. H. HUXLEY.

CHAPTER XIV

1889

THE events to be chronicled in this year are, as might be expected, either domestic or literary. The letters are full of allusions to his long controversy in defence of Agnosticism, mainly with Dr. Wace, who had declared the use of the name to be a "mere evasion" on the part of those who ought to be dubbed infidels; to the building of the new house at Eastbourne, and to the marriage in quick succession of his two youngest daughters, whereby, indeed, the giving up of the house in London and definite departure from London was made possible.

All the early part of the year, till he found it necessary to go to Switzerland again, he stayed unwillingly in Eastbourne, from time to time running up to town, or having son or daughter to stay with him for a week, his wife being too busy to leave town, with the double preparations for the weddings on hand, so that he writes to her: "I feel worse than the 'cowardly agnostic' I am said to be—for leaving you to face your botherations alone." One can picture him still firm of tread, with grizzled head a little stooped from his square shoulders, pacing the sea wall with long strides, or renewing somewhat of his strength as it again began to fail, in the keener air of the downs, warmly defended against chill by a big cap—for he had been suffering from his ears—and a long rough coat. He writes (February 22): "I have bought a cap with flaps to protect my ears. I look more 'doggy' than ever." And on March 3:—

We have had a lovely day, quite an Italian sky and sea, with a good deal of Florentine east wind. I walked up to the Signal House, and was greatly amused by a young sheep-dog whose master could hardly get him away from circling round me and staring at me with a short dissatisfied bark every now and then. It is the undressed wool of my coat bothers all the dogs. They can't understand why a creature which smells so like a sheep should walk on its hind legs. I wish I could have relieved that dog's mind, but I did not see my way to an explanation.

From this time on, the effects of several years' comparative rest became more perceptible. His slowly returning vigour was no longer sapped by the unceasing strain of multifarious occupations. And if his recurrent ill-health sometimes seems too strongly insisted on, it must be remembered that he had always worked at the extreme limit of his powers—the limit, as he used regretfully to say, imposed on his brain by his other organs—and that after his first breakdown he was never very far from a second. When this finally came in 1884, his forces were so far spent that he never expected to recover as he did.

In the marriage this year of his youngest daughter, Huxley was doomed to experience the momentary little twinge which will sometimes come to the supporter of an unpopular principle when he first puts it into practice among his own belongings.

ATHENÆUM CLUB,
Jan. 14, 1889.

MY DEAR HOOKER—I have just left the *x* "Archives" here for you. I left them on my table by mischance when I came here on the *x* day.

I have a piece of family news for you. My youngest daughter Ethel is going to marry John Collier.

I have always been a great advocate for the triumph of common sense and justice in the "Deceased Wife's Sister" business—and only now discover, that I had a sneaking hope that all of my own daughters would escape that experiment!

They are quite suited to one another and I would not wish a better match for her. And whatever annoyances and social pinpricks may come in Ethel's way, I know nobody less likely to care about them.

We shall have to go to Norway, I believe, to get the business done.

In the meantime, my wife (who has been laid up with bronchitic cold ever since we came home) and I have had as much London as we can stand, and are off to-morrow to Eastbourne again, but to more sheltered quarters.

I hope Lady Hooker and you are thriving. Don't conceal the news from her, as my wife is always accusing me of doing.—Ever yours, T. H. HUXLEY.

TO MR. W. F. COLLIER

4 MARLBOROUGH PLACE,
Jan. 24, 1889.

Many thanks for your kind letter. I have as strong an affection for Jack as if he were my own son, and I have felt very keenly the ruin we involuntarily brought upon him—by our poor darling's terrible illness and death. So that if I had not already done my best to aid and abet other people in disregarding the disabilities imposed by the present monstrous state of the law, I should have felt bound to go as far as I could towards mending his life. Ethel is just suited to him. . . . Of course I could have wished that she should be spared the petty annoyances which she must occasionally expect. But I know of no one less likely to care for them.

Your Shakespere parable[1] is charming—but I am afraid it must be put among the endless things that are read *in* to the "divine Williams" as the Frenchman called him.

There was no knowledge of the sexes of plants in Shakespere's time, barring some vague suggestion about figs and dates. Even in the 18th century, after Linnæus, the observations of Sprengel, who was a man of genius, and first properly explained the action of insects, were set aside and forgotten.

I take it that Shakespere is really alluding to the "enforced chastity" of Dian (the moon). The poets ignore that little Endymion business when they like!

I have recovered in such an extraordinary fashion that I can plume myself on being an "interesting case," though I am not going to compete with you in that line. And if you look at the February *Nineteenth* I hope you will think that my brains are none the worse. But perhaps that conceited speech is evidence that they are.

We came to town to make the acquaintance of Nettie's *fiancé*,

[1] The second part of the latter replies to the question whether Shakespeare had any notion of the existence of the sexes in plants and the part played in their fertilisation by insects, which, of course, would be prevented from visiting them by rainy weather, when he wrote in the *Midsummer Night's Dream*—

> The moon, methinks, looks with a watery eye,
> And when she weeps, weeps every little flower,
> Lamenting some enforced chastity.

and I am happy to say the family takes to him. When it does not take to anybody, it is the worse for that anybody.

So, before long, my house will be empty, and as my wife and I cannot live in London, I think we shall pitch our tent in Eastbourne. Good Jack offers to give us a *pied à terre* when we come to town. To-day we are off to Eastbourne again. Carry off Harry, who is done up from too zealous Hospital work. However, it is nothing serious.

The following is in reply to a request that he would write a letter, as he describes it elsewhere, "about the wife's sister business—for the edification of the peers."

3 JEVINGTON GARDENS, EASTBOURNE,
March 12, 1889.

MY DEAR DONNELLY—I feel "downright mean," as the Yankees say, that I have not done for the sake of right and justice what I am moved to do now that I have a personal interest in the matter of the directest kind; and I rather expect that will be thrown in my teeth if my name is at the bottom of anything I write.

On the other hand, I loathe anonymity. However, we can take time to consider that point.

Anyhow I will set to work on the concoction of a letter, if you will supply me with the materials which will enable me to be thoroughly posted up in the facts.

I have just received your second letter. Pity you could not stay over yesterday—it was very fine.—Ever yours very faithfully,

T. H. HUXLEY.

The letter in question is as follows:—

April 30, 1889.

DEAR LORD HARTINGTON—I am assured by those who know more about the political world than I do, that if Lord Salisbury would hold his hand and let his party do as they like about the D.W.S. Bill which is to come on next week, it would pass. Considering the irritation against the bishops and a certain portion of the lay peers among a number of people who have the means of making themselves heard and felt, which is kept up and aggravated, as time goes on, by the action of the Upper House in repeatedly snubbing the Lower, about this question, I should have thought it (from a Conservative point of view) good policy to heal the sore.

The talk of Class *v.* Mass is generally mere clap-trap; but, in this case, there is really no doubt that a fraction of the Classes stands in the way of the fulfilment of a very reasonable demand on the part of the Masses.

A clear-headed man like Lord Salisbury would surely see this if it were properly pressed on his attention.

I do not presume to say whether it is practicable or convenient for the Leader of the Liberal Unionist party to take any steps in this direction; and I should hardly have ventured to ask you to take this suggestion into consideration if the interest I have always taken in the D.W.S. Bill had not recently been quickened by the marriage of one of my daughters as a Deceased Wife's Sister.—I am, etc.

Meantime the effect of Eastbourne, which Sir John Donnelly had induced him to try, was indeed wonderful. He found in it the place he had so long been looking for. References to his health read very differently from those of previous years. He walked up Beachy Head regularly without suffering from any heart symptoms. And though Beachy Head was not the same thing as the Alps, it made a very efficient substitute for a while, and it was not till April that the need of change began to make itself felt. And so he made up his mind to listen no more to the eager friends who wished him to pitch his tent near them at either end of Surrey, but to settle down at Eastbourne, and, by preference, to build a house of the size and on the spot that suited himself, rather than to take any existing house lower down in the town. He must have been a trifle irritated by unsolicited advice when he wrote the following:—

It is very odd that people won't give one credit for common sense. We have tried one winter here, and if we tried another we should be just as much dependent upon the experience of longer residents as ever we were. However, as I told X. I was going to settle matters to-morrow, there won't be any opportunity for discussing that topic when he comes. If we had taken W.'s house, somebody would have immediately told us that we had chosen the dampest site in winter and the stuffiest in summer, and where, moreover, the sewage has to be pumped up into the main drain.

He finally decided upon a site on the high ground near Beachy Head, a little way back from the sea front, at the corner of the Staveley and Buxton Roads, with a guarantee from the Duke of Devonshire's agent that no house should be built at the contiguous end of the adjoining plot of land in the Buxton Road, a plot which he himself afterwards bought. The principal rooms were planned for the back of

the house, looking S.W. over open gardens to the long line of downs which culminate in Beachy Head, but with due provision against southerly gales and excess of sunshine.

On May 29 the builder's contract was accepted, and for the rest of the year the progress of the house, which was designed by his son-in-law, F. W. Waller, afforded a constant interest.

Meantime, with the improvement in his general health, the old appetite for work returned with increased and unwonted zest. For the first time in his life he declares that he enjoyed the process of writing. As he wrote somewhat later to his newly married daughter from Eastbourne, where he had gone again very weary the day after her wedding: "Luckily the bishops and clergy won't let me alone, so I have been able to keep myself pretty well amused in replying." The work which came to him so easily and pleasurably was the defence of his attitude of agnosticism against the onslaught made upon it at the previous Church Congress by Dr. Wace, the Principal of King's College, London, and followed up by articles in the *Nineteenth Century* from the pen of Mr. Frederic Harrison and Mr. Laing, the effect of which upon him he describes to Mr. Knowles on December 30, 1888:—

> I have been stirred up to the boiling pitch by Wace, Laing, and Harrison *in re* Agnosticism, and I really can't keep the lid down any longer. Are you minded to admit a goring article into the February *Nineteenth?*

As for his health, he adds:—

> I have amended wonderfully in the course of the last six weeks, and my doctor tells me I am going to be completely patched up—seams caulked and made seaworthy, so the old hulk may make another cruise.
>
> We shall see. At any rate I have been able and willing to write lately, and that is more than I can say for myself for the first three-quarters of the year.
>
> . . . I was so pleased to see you were in trouble about your house. Good for you to have a taste of it for yourself.

To this controversy he contributed four articles; three directly in defence of Agnosticism, the fourth on the value of the underlying question of testimony to the miraculous.

The first article, "Agnosticism," appeared in the February number of the *Nineteenth Century*. No sooner was this finished than he began a fresh piece of work, "which," he writes, "is all about miracles, and will be rather amusing." This, on the "Value of Testimony to the Miraculous," appeared in the following number of the *Nineteenth Century*. It did not form part of the controversy on hand, though it bore indirectly upon the first principles of agnosticism. The question at issue, he urges, is not the possibility of miracles, but the evidence to their occurrence, and if from preconceptions or ignorance the evidence be worthless the historical reality of the facts attested vanishes. The cardinal point, then, "is completely, as the author of *Robert Elsmere* says, the value of testimony."

The March number also contained replies from Dr. Wace and Bishop Magee on the main question, and an article by Mrs. Humphry Ward on a kindred subject to his own, "The New Reformation." Of these he writes on February 27 :—

The Bishop and Wace are hammering away in the *Nineteenth*. Mrs. Ward's article very good, and practically an answer to Wace. Won't I stir them up by and by.

And a few days later :—

Mrs. Ward's service consists in her very clear and clever exposition of critical results and methods.

3 JEVINGTON GARDENS, EASTBOURNE,
Feb. 29, 1889.

MY DEAR KNOWLES—I have just been delighted with Mrs. Ward's article. She has swept away the greater part of Wace's sophistries as a dexterous and strong-wristed housemaid sweeps away cobwebs with her broom, and saved a lot of time.

What in the world does the Bishop mean by saying that I have called Christianity "sorry stuff" (p. 370)? To my knowledge I never so much as thought anything of the kind, let alone saying it.

I shall challenge him very sharply about this, and if, as I believe, he has no justification for his statement, my opinion of him will be very considerably lowered.

Wace has given me a lovely opening by his profession of belief in the devils going into the swine. I rather hoped I should get this out of him.

I find people are watching the game with great interest, and if it should be possible for me to give a little shove to the "New Reformation" I shall think the fag end of my life well spent.

After all, the reproach made to the English people that "they care for nothing but religion and politics" is rather to their credit. In the long run these are the two things that ought to interest a man more than any others.

I have been much bothered with ear-ache lately, but if all goes well I will send you a screed by the middle of March.

Snowing hard! They have had more snow within the last month than they have known for ten years here.—Ever yours faithfully, T. H. HUXLEY.

He set to work immediately, and within ten days despatched his second contribution, "Agnosticism, a Rejoinder," which appeared in the April number of the *Nineteenth Century*.

On March 3 he writes:—

I am possessed by a writing demon, and have pretty well finished in the rough another article for Knowles, whose mouth is wide open for it.

And on the 9th:—

I sent off another article to Knowles last night—a regular facer for the clericals. You can't think how I enjoy writing now for the first time in my life.

He writes at greater length to Mr. Knowles:—

3 JEVINGTON GARDENS, EASTBOURNE,
March 10, 1889.

MY DEAR KNOWLES—There's a Divinity that shapes the ends (of envelopes!) rough-hew them how we will. This time I went and bought the strongest to be had, and sealed him up with wax in the shop. I put no note inside, meaning to write to you afterwards, and then I forgot to do so.

I can't understand Peterborough nohow. However, so far as the weakness of the flesh would permit me to abstain from smiting him and his brother Amalekite, I have tried to turn the tide of battle to matters of more importance.

The pith of my article is the proposition that Christ was not a Christian. I have not ventured to state my thesis exactly in that form—fearing the Editor—but, in a mild and proper way, I flatter

myself I have demonstrated it. Really, when I come to think of the claims made by orthodox Christianity on the one hand, and of the total absence of foundation for them on the other, I find it hard to abstain from using a phrase which shocked me very much when Strauss first applied it to the Resurrection, "Welthistorischer Humbug!"

I don't think I have ever seen the portrait you speak of. I remember the artist—a clever fellow, whose name, of course, I forget—but I do not think I saw his finished work. Some of these days I will ask to see it.

I was pretty well finished after the wedding, and bolted here the next day. I am sorry to say I could not get my wife to come with me. If she does not knock up I shall be pleasantly surprised. The young couple are flourishing in Paris. I like what I have seen of him very much.

What is the "Cloister scheme"?[1] Recollect how far away I am from the world, the flesh and the d——.

Are you and Mrs. Knowles going to imitate the example of Eginhard and Emma? What good pictures you will have in your monastery church!—Ever yours very faithfully,

T. H. HUXLEY.

And again, a few days later:—

3 JEVINGTON GARDENS, EASTBOURNE,
March 15, 1889.

MY DEAR KNOWLES—I am sending my proof back to Spottiswoode's. I did not think the MS. would make so much, and I am afraid it has lengthened in the process of correction.

You have a reader in your printer's office who provides me with jokes. Last time he corrected, where my MS. spoke of the pigs as unwilling "porters" of the devils, into "porkers." And this time, when I, writing about the Lord's Prayer, say "current formula," he has it "canting formula." If only Peterborough had got hold of that! And I am capable of overlooking anything in a proof.

You see we have got to big questions now, and if these are once fairly before the general mind all the King's horses and all the King's men won't put the orthodox Humpty Dumpty where he was before.—Ever yours very faithfully, T. H. HUXLEY.

After the article came out he wrote again to Mr. Knowles:—

[1] It referred to a plan for using the cloisters of Westminster Abbey to receive the monuments of distinguished men, so as to avoid the necessity of enlarging the Abbey itself.

4 MARLBOROUGH PLACE, N.W.,
April 14, 1889.

MY DEAR KNOWLES—I am going to try and stop here, desolate as the house is now all the chicks have flown, for the next fortnight. Your talk of the inclemency of Torquay is delightfully consoling. London has been vile.

I am glad you are going to let Wace have another "go." My object, as you know, in the whole business has been to rouse people to think. . . .

Considering that I got named in the House of Commons last night as an example of a temperate and well-behaved blasphemer,[1] I think I am attaining my object.

Of course I go for a last word, and I am inclined to think that whatever Wace may say, it may be best to get out of the region of controversy as far as possible and hammer in two big nails—(1) that the Demonology of Christianity shows that its founders knew no more about the spiritual world than anybody else, and (2) that Newman's doctrine of "Development" is true to an extent of which the Cardinal did not dream.

I have been reading some of his works lately, and I understand now why Kingsley accused him of growing dishonesty.

After an hour or two of him I began to lose sight of the distinction between truth and falsehood.—Ever yours,

T. H. HUXLEY.

If you are at home any day next week I will look in for a chat.

The controversy was completed by a third article, "Agnosticism and Christianity," in the June number of the *Nineteenth Century*. There was a humorous aspect of this article which tickled his fancy immensely, for he drove home his previous arguments by means of an authority whom his adversaries could not neglect, though he was the last man they could have expected to see brought up against them in this connection—Cardinal Newman. There is no better evidence for ancient than for modern miracles, he says in effect; let us therefore accept the teachings of the Church which maintains a continuous tradition on the subject. But there is a very different conclusion to be drawn from the same premises; all may be regarded as

[1] In the debate upon the Religious Prosecutions Abolition Bill, Mr. Addison said "the last article by Professor Huxley in the *Nineteenth Century* showed that opinion was free when it was honestly expressed."—*Times*, April 14.

equally doubtful, and so he writes on May 30 to Sir J. Hooker :—

By the way, I want you to enjoy my wind-up with Wace in this month's *Nineteenth* in the reading as much as I have in the writing. It's as full of malice [1] as an egg is full of meat, and my satisfaction in making Newman my accomplice has been unutterable. That man is the slipperiest sophist I have ever met with. Kingsley was entirely right about him.

Now for peace and quietness till after the next Church Congress!

Three other letters to Mr. Knowles refer to this article.

4 MARLBOROUGH PLACE, N.W.,
May 4, 1889.

MY DEAR KNOWLES—I am at the end of my London tether, and we go to Eastbourne (3 Jevington Gardens again) on Monday.

I have been working hard to finish my paper, and shall send it to you before I go.

I am astonished at its meekness. Being reviled, I revile not; not an exception, I believe, can be taken to the wording of one of the venomous paragraphs in which the paper abounds. And I perceive the truth of a profound reflection I have often made, that reviling is often morally superior to not reviling.

I give up Peterborough. His "Explanation" is neither straightforward, nor courteous, nor prudent. Of which last fact, it may be, he will be convinced when he reads my acknowledgment of his favours, which is soft, not with the softness of the answer which turneth away wrath, but with that of the pillow which smothered Desdemona.—Ever yours very faithfully, T. H. HUXLEY.

I shall try to stand an hour or two of the Academy dinner, and hope it won't knock me up.

4 MARLBOROUGH PLACE, N.W.,
May 6, 1889.

MY DEAR KNOWLES—If I had not gone to the Academy dinner I might have kept my promise about sending you my paper to-day. I indulged in no gastronomic indiscretions, and came away after H.R.H.'s speech, but I was dead beat all yesterday, nevertheless.

We are off to Eastbourne, and I will send the MS. from there; there is very little to do.

[1] *i.e.* in the French sense of the word.

Such a waste! I shall have to omit a paragraph that was really a masterpiece.

For who should I come upon in one of the rooms but the Bishop! As we shook hands, he asked whether that was before the fight or after; and I answered, "A little of both." Then we spoke our minds pretty plainly; and then we agreed to bury the hatchet.[1]

So yesterday I tore up *the* paragraph. It was so appropriate I could not even save it up for somebody else!—Ever yours,

T. H. HUXLEY.

3 JEVINGTON GARDENS, EASTBOURNE,
May 22, 1889.

MY DEAR KNOWLES—I sent back my proof last evening. I shall be in town Friday afternoon to Monday morning next, having a lot of things to do. So you may as well let me see a revise of the whole. Did you not say to me, "sitting by a sea-coal fire" (I say nothing about a "parcel gilt goblet"), that this screed was to be the "last word"? I don't mind how long it goes on so long as I have the last word. But you must expect nothing from me for the next three or four months. We shall be off abroad, not later than the 8th June, and among the everlasting hills, a fico for your controversies! Wace's paper shall be waste paper for me. Oh! This is a "goak" which Peterborough would not understand.

I think you are right about the wine and water business—I had my doubts—but it was too tempting. All the teetotallers would have been on my side.

There is no more curious example of the influence of education than the respect with which this poor bit of conjuring is regarded. Your genuine pietist would find a mystical sense in thimblerig. I trust you have properly enjoyed the extracts from Newman. That a man of his intellect should be brought down to the utterance of such drivel—by Papistry, is one of the strongest of arguments against that damnable perverter of mankind, I know of.—Ever yours very faithfully, T. H. HUXLEY.

Shortly afterwards, he received a long and rambling letter in connection with this subject. Referring to the passage in the first article, "the apostolic injunction to 'suffer fools gladly' should be the rule of life of a true agnostic," the writer began by begging him "to 'suffer gladly' one fool more," and after several pages wound up

[1] As he says (*Coll. Ess.* v. 210), this chance meeting ended "a temporary misunderstanding with a man of rare ability, candour, and wit, for whom I entertained a great liking and no less respect."

with a variation of the same phrase. It being impossible to give any valid answer to his hypothetical inquiries, Huxley could not resist the temptation to take the opening thus offered him, and replied :—

SIR—I beg leave to acknowledge your letter. I have complied with the request preferred in its opening paragraph.—Faithfully yours, T. H. HUXLEY.

The following letter also arises out of this controversy:—

Its occasion (writes Mr. Taylor) was one which I had written on seeing an article in which he referred to the Persian sect of the Bâbis. I had read with much interest the account of it in Count Gobineau's book, and was much struck with the points of likeness to the foundation of Christianity, and the contrast between the subsequent history of the two; I asked myself how, given the points of similarity, to account for the contrast; is it due to the Divine within the one, or the human surroundings? This question I put to Professor Huxley, with many apologies for intruding on his leisure, and a special request that he would not suffer himself to be further troubled by any reply.

TO MR. ROBERT TAYLOR

4 MARLBOROUGH PLACE, N.W.,
June 3, 1889.

SIR—In looking through a mass of papers, before I leave England for some months among the mountains in search of health, I have come upon your letter of 7th March. As a rule I find that out of the innumerable letters addressed to me, the only ones I wish to answer are those the writers of which are considerate enough to ask that they may receive no reply, and yours is no exception.

The question you put is very much to the purpose: a proper and full answer would take up many pages; but it will suffice to furnish the heads to be filled up by your own knowledge.

1. The Church founded by Jesus has *not* made its way; has *not* permeated the world—but *did* become extinct in the country of its birth—as Nazarenism and Ebionism.

2. The Church that did make its way and coalesced with the State in the 4th century had no more to do with the Church founded by Jesus than Ultramontanism has with Quakerism. It is Alexandrian Judaism and Neoplatonistic mystagogy, and as much of the

old idolatry and demonology as could be got in under new or old names.

3. Paul has said that the Law was schoolmaster to Christ with more truth than he knew. Throughout the Empire the synagogues had their cloud of Gentile hangers-on—those who "feared God"—and who were fully prepared to accept a Christianity, which was merely an expurgated Judaism and the belief in Jesus as the Messiah.

4. The Christian "Sodalitia" were not merely religious bodies, but friendly societies, burial societies, and guilds. They hung together for all purposes—the mob hated them as it now hates the Jews in Eastern Europe, because they were more frugal, more industrious, and lived better lives than their neighbours, while they stuck together like Scotchmen.

If these things are so—and I appeal to your knowledge of history that they are so—what has the success of Christianity to do with the truth or falsehood of the story of Jesus?—I am, yours very faithfully, T. H. HUXLEY.

The following letter was written in reply to one from Mr. Clodd on the first of the articles in this controversy. This article, it must be remembered, not only replied to Dr. Wace's attack, but at the same time bantered Mr. Frederic Harrison's pretensions on behalf of Positivism at the expense alike of Christianity and Agnosticism.

3 JEVINGTON GARDENS, EASTBOURNE,
Feb. 19, 1889.

MY DEAR MR. CLODD—I am very much obliged to you for your cheery and appreciative letter. If I do not empty all Harrison's vials of wrath I shall be astonished! But of all the sickening humbugs in the world, the sham pietism of the Positivists is to me the most offensive.

I have long been wanting to say my say about these questions, but my hands were too full. This time last year I was so ill that I thought to myself, with Hamlet, "the rest is silence." But my wiry constitution has unexpectedly weathered the storm, and I have every reason to believe that with renunciation of the devil and all his works (*i.e.* public speaking, dining and being dined, etc.) my faculties may be unimpaired for a good spell yet. And whether my lease is long or short, I mean to devote them to the work I began in the paper on the Evolution of Theology.

You will see in the next *Nineteenth* a paper on the Evidence of Miracles, which I think will be to your mind.

Hutton is beginning to drivel.[1] There really is no other word for it.—Ever yours very faithfully, T. H. HUXLEY.

TO THE SAME

4 MARLBOROUGH PLACE,
April 15, 1889.

MY DEAR MR. CLODD—The adventurous Mr. C. wrote to me some time ago. I expressed my regret that I could do nothing for the evolution of tent-pegs. What wonderful people there are in the world!

Many thanks for calling my attention to "Antiqua Mater." I will look it up. I have such a rooted objection to returning books, that I never borrow one or allow anybody to lend me one if I can help it.

I hear that Wace is to have another innings, and I am very glad of it, as it will give me the opportunity of putting the case once more as a connected argument.

It is Baur's great merit to have seen that the key to the problem of Christianity lies in the Epistle to the Galatians. No doubt he and his followers rather overdid the thing, but that is always the way with those who take up a new idea.

I have had for some time the notion of dealing with the "Three great myths"—1. Creation; 2. Fall; 3. Deluge; but I suspect I am getting to the end of my tether physically, and shall have to start for the Engadine in another month's time.

Many thanks for your congratulations about my daughter's marriage. No two people could be better suited for one another, and there is a charming little grand-daughter of the first marriage to be cared for.—Ever yours very faithfully, T. H. HUXLEY.

One more piece of writing dates from this time. He writes to his wife on March 2 :—

A man who is bringing out a series of portraits of celebrities, with a sketch of their career attached, has bothered me out of my life for something to go with my portrait, and to escape the abominable bad taste of some of the notices, I have done that. I shall show it you before it goes back to Engel in proof.

This sketch of his life is the brief autobiography which is printed at the beginning of vol. i. of the *Collected Essays*.

[1] This refers to an article in the *Spectator* on "Professor Huxley and Agnosticism," Feb. 9, 1889, which suggests, with regard to demoniac possession, that the old doctrine of one spirit driving out another is as good as any new explanation, and fortifies this conclusion by a reference to the phenomena of hypnotism.

He was often pressed, both by friends and by strangers, to give them some more autobiography; but moved either by dislike of any approach to egotism, or by the knowledge that if biography is liable to give a false impression, autobiography may leave one still more false, he constantly refused to do so especially so long as he had capacity for useful work. I found, however, among his papers, an entirely different sketch of his early life, half-a-dozen sheets describing the time he spent in the East end, with an almost Carlylese sense of the horrible disproportions of life. I cannot tell whether this was a first draft for the present autobiography, or the beginnings of a larger undertaking.

Several letters of miscellaneous interest were written before the move to the Engadine took place. They touch on such points as the excessive growth of scientific clubs, the use of alcohol for brain workers, advice to one who was not likely to "suffer fools gladly" about applying for the assistant secretaryship of the British Association, and the question of the effects of the destruction of immature fish, besides personal matters.

3 JEVINGTON GARDENS, EASTBOURNE,
March 22, 1889.

MY DEAR HOOKER—I suppose the question of amalgamation with the Royal is to be discussed at the Phil. Club. The sooner something of the kind takes place the better. There is really no *raison d'être* left for the Phil. Club, and considering the hard work of scientific men in these days, clubs are like hypotheses, not to be multiplied beyond necessity.—Ever yours, T. H. HUXLEY.

4 MARLBOROUGH PLACE,
March 26, 1889.

MY DEAR HOOKER—The only science to which X. has contributed, so far as I know, is the science of self-advertisement; and of that he is a master.

When you and I were youngsters, we thought it the great thing to exorcise the aristocratic flunkeyism which reigned in the R.S.—the danger now is that of the entry of seven devils worse than the first, in the shape of rich engineers, chemical traders, and "experts" (who have sold their souls for a good price), and who find it helps them to appear to the public as if they were men of science.

If the Phil. Club had kept pure, it might have acted as a check upon the intrusion of the mere trading element. But there seems

to be no reason now against Jack and Tom and Harry getting in, and the thing has become an imposture.

So I go with you for extinction, before we begin to drag in the mud.

I wish I could take some more active part in what is going on. I am anxious about the Society altogether. But though I am wonderfully well so long as I live like a hermit, and get out into the air of the Downs, either London, or bother, and still more both combined, intimate respectfully but firmly, that my margin is of the narrowest.—Ever yours, T. H. HUXLEY.

The following is to his daughter in Paris. Of course it was the Tuileries, not the Louvre, which was destroyed in 1871 :—

I think you are quite right about French women. They are like French dishes, uncommonly well cooked and sent up, but what the dickens they are made of is a mystery. Not but what all womankind are mysteries, but there are mysteries of godliness and mysteries of iniquity.

Have you been to see the sculptures in the Louvre?—dear me, I forgot the Louvre's fate. I wonder where the sculpture is? I used to think it the best thing in the way of art in Paris. There was a youthful Bacchus who was the main support of my thesis as to the greater beauty of the male figure!

Probably I had better conclude.

TO MR. E. T. COLLINGS (OF BOLTON)

4 MARLBOROUGH PLACE,
April 9, 1889.

DEAR SIR—I understand that you ask me what I think about "alcohol as a stimulant to the brain in mental work"?

Speaking for myself (and perhaps I may add for persons of my temperament), I can say, without hesitation, that I would just as soon take a dose of arsenic as I would of alcohol, under such circumstances. Indeed on the whole, I should think the arsenic safer, less likely to lead to physical and moral degradation. It would be better to die outright than to be alcoholised before death.

If a man cannot do brain work without stimulants of any kind, he had better turn to hand work—it is an indication on Nature's part that she did not mean him to be a head worker.

The circumstances of my life have led me to experience all sorts of conditions in regard to alcohol, from total abstinence to nearly the other end of the scale, and my clear conviction is the less the better, though I by no means feel called upon to forgo the comforting and cheering effect of a little.

But for no conceivable consideration would I use it to whip up a tired or sluggish brain. Indeed, for me there is no working time so good as between breakfast and lunch, when there is not a trace of alcohol in my composition.

4 MARLBOROUGH PLACE,
May 6, 1889.

MY DEAR HOOKER—I meant to have turned up at the *x* on Thursday, but I was unwell and, moreover, worried and bothered about Collier's illness at Venice, and awaiting telegram I sent there. He has contrived to get scarlatina, but I hope he will get safe through it, as he seems to be going on well. We were getting ready to go out until we were reassured on that point.

I thought I would go to the Academy dinner on Saturday, and that if I did not eat and drink and came away early, I might venture.

It was pleasant enough to have a glimpse of the world, the flesh (in the walls, nude!), and the devil (there were several Bishops), but oh, dear! how done I was yesterday.

However, we are off to Eastbourne to-day, and I hope to wash three weeks' London out of me before long. I think we shall go to Maloja again early in June.—Ever yours, T. H. HUXLEY.

Capital portrait in the New Gallery, when I looked in for a quarter of an hour on Saturday—only you never were quite so fat in the cheeks, and I don't believe you have got such a splendid fur-coat!

3 JEVINGTON GARDENS, EASTBOURNE,
May 22, 1889.

. . . As to the Assistant Secretaryship of the British Association, I have turned it over a great deal in my mind since your letter reached me, and I really cannot convince myself that you would suit it or it would suit you. I have not heard who are candidates or anything about it, and I am not going to take any part in the election. But looking at the thing solely from the point of view of your interests, I should strongly advise you against taking it, even if it were offered.

My pet aphorism "suffer fools gladly" should be the guide of the Assistant Secretary, who, during the fortnight of his activity, has more little vanities and rivalries to smooth over and conciliate than other people meet with in a lifetime. Now you do *not* "suffer fools gladly"; on the contrary, you "gladly make fools suffer." I do not say you are wrong—No *tu quoque*—but that is where the danger of the explosion lies—not in regard to the larger business of the Association.

The risk is great and the £300 a year is not worth it. Foster knows all about the place; ask him if I am not right.

Many thanks for the suggestion about *Spirula*. But the matter is in a state in which no one can be of any use but myself. At present I am at the end of my tether and I mean to be off to the Engadine a fortnight hence—most likely not to return before October.

Not even the sweet voice of —— will lure me from my retirement. The Academy dinner knocked me up for three days, though I drank no wine, ate very little, and vanished after the Prince of Wales' speech. The truth is I have very little margin of strength to go upon even now, though I am marvellously better than I was.

I am very glad that you see the importance of doing battle with the clericals. I am astounded at the narrowness of view of many of our colleagues on this point. They shut their eyes to the obstacles which clericalism raises in every direction against scientific ways of thinking, which are even more important than scientific discoveries.

I desire that the next generation may be less fettered by the gross and stupid superstitions of orthodoxy than mine has been. And I shall be well satisfied if I can succeed to however small an extent in bringing about that result.—I am, yours very faithfully,

T. H. HUXLEY.

4 MARLBOROUGH PLACE,
May 25, 1889.

MY DEAR LANKESTER—I cannot attend the Council meeting on the 29th. I have a meeting of the Trustees of the British Museum to-day, and to be examined by a Committee on Monday, and as the sudden heat half kills me I shall be fit for nothing but to slink off to Eastbourne again.

However, I do hope the Council will be very careful what they say or do about the immature fish question. The thing has been discussed over and over again *ad nauseam*, and I doubt if there is anything to be added to the evidence in the blue-books.

The *idée fixe* of the British public, fishermen, M.P.'s and ignorant persons generally is that all small fish, if you do not catch them, grow up into big fish. They cannot be got to understand that the wholesale destruction of the immature is the necessary part of the general order of things, from codfish to men.

You seem to have some very interesting things to talk about at the Royal Institution.

Do you see any chance of educating the white corpuscles of the human race to destroy the theological bacteria which are bred in parsons?—Ever yours very faithfully, T. H. HUXLEY.

3 JEVINGTON GARDENS, EASTBOURNE,
May 19, 1889.

MY DEAR DONNELLY—The Vice-President's letter has brought home to me one thing very clearly, and that is, that I had no business to sign the Report. Of course he has a right to hold me responsible for a document to which my name is attached, and I should look more like a fool than I ever wish to do, if I had to tell him that I had taken the thing entirely on trust. I have always objected to the sleeping partnership in the Examination; and unless it can be made quite clear that I am nothing but a "consulting doctor," I really must get out of it entirely.

Of course I cannot say whether the Report is justified by the facts or not, when I do not know anything about them. But from my experience of what the state of things used to be, I should say that it is, in all probability, fair.

The faults mentioned are exactly those which always have made their appearance, and I expect always will do so, and I do not see why the attention of the teachers should not as constantly be directed to them. You talk of Eton. Well, the reports of the Examiners to the governing body, year after year, had the same unpleasing monotony, and I do not believe that there is any educational body, from the Universities downwards, which would come out much better, if the Examiners' reports were published and if they did their duty.

I am unable to see my way (and I suppose you are) to any better method of State encouragement of science teaching than payment by results. The great and manifest evil of that system, however, is the steady pressure which it exerts in the development of every description of sham teaching. And the only check upon this kind of swindling the public seems to me to lie in the hands of the Examiners. I told Mr. Forster so, ages ago, when he talked to me about the gradual increase of the expenditure, and I have been confirmed in my opinion by all subsequent experience. What the people who read the reports may say, I should not care one 2d. d— if I had to administer the thing.

Nine out of ten of them are incompetent to form any opinion on an educational subject; and as a mere matter of policy, I should, in dealing with them, be only too glad to be able to make it clear that some of the defects and shortcomings inherent in this (as in all systems) had been disguised, and that even the most fractious of Examiners had said their say without let or hindrance.

It is the nature of the system which seems to me to demand as a corrective incessant and severe watchfulness on the part of the Examiners, and I see no harm if they a little overdo the thing in

this direction, for every sham they let through is an encouragement to other shams and pot-teaching in general.

And if the "great heart" of the people and its thick head can't be got to appreciate honesty, why the sooner we shut up the better. Ireland may be for the Irish, but science teaching is not for the sake of science teachers.—Ever yours, T. H. HUXLEY.

CHAPTER XV

1889

FROM the middle of June to the middle of September, Huxley was in Switzerland, first at Monte Generoso, then, when the weather became more settled, at the Maloja. Here, as his letters show, he "rejuvenated" to such an extent that Sir Henry Thompson, who was at the Maloja, scoffed at the idea of his ever having had dilated heart.

MONTE GENEROSO, TESSIN, SUISSE,
June 25, 1889.

MY DEAR HOOKER—I am quite agreed with the proposed arrangements for the *x*, and hope I shall show better in the register of attendance next session.

When I am striding about the hills here I really feel as if my invalidism were a mere piece of malingering. When I am well I can walk up hill and down dale as well as I did twenty years ago. But my margin is abominably narrow, and I am at the mercy of "liver and lights." Sitting up for long and dining are questions of margin.

I do not know if you have been here. We are close on 4000 feet up and look straight over the great plain of N. Italy on the one side and to a great hemicycle of mountains, Monte Rosa among them, on the other. I do not know anything more beautiful in its way. But the whole time we have been here the weather has been extraordinary. On the average, about two thunderstorms *per diem*. I am sure that a good meteorologist might study the place with advantage. The barometer has not varied three-twentieths of an inch the whole time, notwithstanding the storms.

I hear the weather has been bad all over Switzerland, but it is not high and dry enough for me here, and we shall be off to the Maloja on Saturday next, and shall stay there till we return somewhere in September. Collier and Ethel will join us there in August. He is none the worse for his scarlatina.

"Aged Botanist!" marry come up![1] I should like to know of a younger spark. The first time I heard myself called "the old gentleman" was years ago when we were in South Devon. A half-drunken Devonian had made himself very offensive, in the compartment in which my wife and I were travelling, and got some "simple Saxon" from me, accompanied, I doubt not, by an awful scowl. "Ain't the old gentleman in a rage," says he.

I am very glad to hear of Reggie's success, and my wife joins with me in congratulations. It is a comfort to see one's shoots planted out and taking root, though the idea that one's cares and anxieties about them are diminished, we find to be an illusion.

I inclose cheque for my contributions due and to come.[2] If I go to Davy's Locker before October, the latter may go for consolation champagne!—Ever yours affectionately,

T. H. HUXLEY.

He writes from the Maloja on August 16 to Sir M. Foster, who had been sitting on the Vaccination Commission:—

I wonder how you are prospering, whether you have vaccination or anti-vaccination on the brain; or whether the gods have prospered you so far as to send you on a holiday. We have been here since the beginning of July. Monte Generoso proved lovely—but electrical. We had on the average three thunderstorms every two days. Bellagio was as hot as the tropics, and we stayed only a day, and came on here—where, whatever else may happen, it is never too hot. The weather has been good and I have profited immensely, and at present I do not know whether I have a heart or not. But I have to look very sharp after my liver. H. Thompson, who has been here with his son Herbert (clever fellow, by the way), treats the notion that I ever had a dilated heart with scorn! Oh these doctors! they are worse than theologians.

And again on August 31:—

I walked eighteen miles three or four days ago, and I think nothing of one or two thousand feet up! I hope this state of things will last at the sea-level.

I am always glad to hear of and from you, but I have not been idle long enough to forget what being busy means, so don't let your conscience worry you about answering my letters.

. . . X. is, I am afraid, more or less of an ass. The opposition

[1] Sir J. Hooker jestingly congratulated him on taking up botany in his old age.

[2] For the *x* Club.

he and his friends have been making to the Technical Bill is quite unintelligible to me. Y. may be, and I rather think is, a knave, but he is no fool; and if I mistake not he is minded to kick the ultra-radical stool down now that he has mounted by it. Make friends of that Mammon of unrighteousness and swamp the sentimentalists.

. . . I despise your insinuations. All my friends here have been theological—Bishop, Chief Rabbi, and Catholic Professor. None of your Maybrick discussors.

On June 25 he wrote to Professor Ray Lankester, enclosing a letter to be read at a meeting called by the Lord Mayor, on July 1, to hear statements from men of science with regard to the recent increase of rabies in this country, and the efficiency of the treatment discovered by M. Pasteur for the prevention of hydrophobia.

I quote the latter from the report in *Nature* for July 4 :—

MONTE GENEROSO, TESSIN, SUISSE,
June 25, 1889.

MY DEAR LANKESTER—I inclose herewith a letter for the Lord Mayor and a cheque for £5 as my subscription. I wish I could make the letter shorter, but it is pretty much "pemmican" already. However, it does not much matter being read if it only gets into print.

It is uncommonly good of the Lord Mayor to stand up for Science, in the teeth of the row the anti-vivisection pack—dogs and doggesses—are making.

May his shadow never be less.

We shall be off to the Maloja at the end of this week, if the weather mends. Thunderstorms here every day, and sometimes two or three a day for the last ten days.—Ever yours very faithfully,

T. H. HUXLEY.

MONTE GENEROSO, SWITZERLAND,
June 25, 1889.

MY LORD MAYOR—I greatly regret my inability to be present at the meeting which is to be held, under your Lordship's auspices, in reference to M. Pasteur and his Institute. The unremitting labours of that eminent Frenchman during the last half-century have yielded rich harvests of new truths, and are models of exact and refined research. As such they deserve, and have received, all the honours which those who are the best judges of their purely scientific merits are able to bestow. But it so happens that these

subtle and patient searchings out of the ways of the infinitely little—of the swarming life where the creature that measures one thousandth part of an inch is a giant—have also yielded results of supreme practical importance. The path of M. Pasteur's investigations is strewed with gifts of vast monetary value to the silk trade, the brewer, and the wine merchant. And this being so, it might well be a proper and graceful act on the part of the representatives of trade and commerce in its greatest centre to make some public recognition of M. Pasteur's services, even if there were nothing further to be said about them. But there is much more to be said. M. Pasteur's direct and indirect contributions to our knowledge of the causes of diseased states, and of the means of preventing their recurrence, are not measurable by money values, but by those of healthy life and diminished suffering to men. Medicine, surgery, and hygiene have all been powerfully affected by M. Pasteur's work, which has culminated in his method of treating hydrophobia. I cannot conceive that any competently instructed person can consider M. Pasteur's labours in this direction without arriving at the conclusion that, if any man has earned the praise and honour of his fellows, he has. I find it no less difficult to imagine that any wealthy country should be other than ashamed to continue to allow its citizens to profit by the treatment freely given at the Institute without contributing to its support. Opposition to the proposals which your Lordship sanctions would be equally inconceivable if it arose out of nothing but the facts of the case thus presented. But the opposition which, as I see from the English papers, is threatened has really for the most part nothing to do either with M. Pasteur's merits or with the efficacy of his method of treating hydrophobia. It proceeds partly from the fanatics of *laissez faire*, who think it better to rot and die than to be kept whole and lively by State interference, partly from the blind opponents of properly conducted physiological experimentation, who prefer that men should suffer than rabbits or dogs, and partly from those who for other but not less powerful motives hate everything which contributes to prove the value of strictly scientific methods of enquiry in all those questions which affect the welfare of society. I sincerely trust that the good sense of the meeting over which your Lordship will preside will preserve it from being influenced by those unworthy antagonisms, and that the just and benevolent enterprise you have undertaken may have a happy issue.—I am, my Lord Mayor, your obedient servant,

THOMAS H. HUXLEY.

HOTEL KURSAAL, MALOJA, HAUTE ENGADINE.
July 8, 1889.

MY DEAR LANKESTER—Many thanks for your letter. I was rather anxious as to the result of the meeting, knowing the malice

and subtlety of the Philistines, but as it turned out they were effectually snubbed. I was glad to see your allusion to Coleridge's impertinences. It will teach him to think twice before he abuses his position again. I do not understand Stead's position in the *Pall Mall*. He snarls but does not bite.

I am glad that the audience (I judge from the *Times* report) seemed to make the points of my letter, and live in hope that when I see last week's *Spectator* I shall find Hutton frantic.

This morning a letter marked "Immediate" reached me from Bourne, date July 3. I am afraid he does not read the papers or he would have known it was of no use to appeal to me in an emergency. I am writing to him.—Ever yours very faithfully,

T. H. HUXLEY.

On his return to England, however, a fortnight of London, interrupted though it was by a brief visit to Mr. and Mrs. Humphry Ward at the delightful old house of Great Hampden, was as much as he could stand. "I begin to discover," he writes to Sir M. Foster, "I have a heart again, a circumstance of which I had no reminder at the Maloja." So he retreated at once to Eastbourne, which had done him so much good before.

4 MARLBOROUGH PLACE,
Sept. 24, 1889.

MY DEAR HOOKER—How's a' wi' ye? We came back from the Engadine early in the month, and are off to Eastbourne to-morrow. I rejuvenate in Switzerland and senescate (if there is no such verb, there ought to be) in London, and the sooner I am out of it the better.

When are you going to have an x? I cannot make out what has become of Spencer, except that he is somewhere in Scotland.—Ever yours, T. H. HUXLEY.

We shall be at our old quarters—3 Jevington Gardens, Eastbourne—from to-morrow onwards.

The next letter shows once more the value he set upon botanical evidence in the question of the influence of conditions in the process of evolution.

3 JEVINGTON GARDENS, EASTBOURNE,
Sept. 29, 1889.

MY DEAR HOOKER—I hope to be with you at the Athenæum on Thursday. It does one good to hear of your being in such

good working order. My knowledge of orchids is infinitesimally small, but there were some eight or nine species plentiful in the Engadine, and I learned enough to appreciate the difficulties. Why do not some of these people who talk about the direct influence of conditions try to explain the structure of orchids on that tack? Orchids at any rate can't try to improve themselves in taking shots at insects' heads with pollen bags—as Lamarck's Giraffes tried to stretch their necks!

Balfour's *ballon d'essai*[1] (I do not believe it could have been anything more) is the only big blunder he has made, and it passes my comprehension why he should have made it. But he seems to have dropped it again like the proverbial hot potato. If he had not, he would have hopelessly destroyed the Unionist party.—Ever yours,

T. H. HUXLEY.

At the end of the year he thanks Lord Tennyson for his gift of "Demeter."

Dec. 26, 1889.

MY DEAR TENNYSON—Accept my best thanks for your very kind present of "Demeter." I have not had a Christmas Box I valued so much for many a long year. I envy your vigour, and am ashamed of myself beside you for being turned out to grass. I kick up my heels now and then, and have a gallop round the paddock, but it does not come to much.

With best wishes to you, and, if Lady Tennyson has not forgotten me altogether, to her also—Believe me, yours very faithfully,

T. H. HUXLEY.

A discussion in the *Times* this autumn, in which he joined, was of unexpected moment to him, inasmuch as it was the starting-point for no fewer than four essays in political philosophy, which appeared the following year in the *Nineteenth Century*.

The correspondence referred to arose out of the heckling of Mr. John Morley by one of his constituents at Newcastle in November 1889. The heckler questioned him concerning private property in land, quoting some early dicta from the "Social Statics" of Mr. Herbert Spencer, which denied the justice of such ownership. Comments and explanations ensued in the *Times*; Mr. Spencer declared that he had since partly altered that view, showing that contract has in part superseded force as the ground of ownership; and that

[1] *i.e.* touching a proposed Roman Catholic University for Ireland.

in any case it referred to the idea of absolute ethics, and not to relative or practical politics.

Huxley entered first into the correspondence to point out present and perilous applications of the absolute in contemporary politics. Touching on a State guarantee of the title to land, he asks if there is any moral right for confiscation:—In Ireland, he says, confiscation is justified by the appeal to wrongs inflicted a century ago; in England the theorems of "absolute political ethics" are in danger of being employed to make this generation of land-owners responsible for the misdeeds of William the Conqueror and his followers. (*Times*, November 12.)

His remaining share in the discussion consisted of a brief passage of arms with Mr. Spencer on the main question,[1] and a reply to another correspondent,[2] which brings forward an argument enlarged upon in one of the essays, viz. that if the land belongs to all men equally, why should one nation claim one portion rather than another? For several ownership is just as much an infringement of the world's ownership as is personal ownership. Moreover, history shows that land was originally held in several ownership, and that not of the nation, but of the village community.

These signs of renewed vigour induced Mr. Knowles to write him a "begging letter," proposing an article for the *Nineteenth Century* either in commendation of Bishop Magee's recent utterances—it would be fine for eulogy to come from such a quarter after the recent encounter—or on the general subject of which his *Times* letters dealt with a part.

Huxley's choice was for the latter. Writing on November 21, he says:—

> Now as to the article. I have only hesitated because I want to get out a new volume of essays, and I am writing an introduction which gives me an immensity of trouble. I had made up my mind to get it done by Christmas, and if I write for you it won't be. However, if you don't mind leaving it open till the end of this month, I will see what can be done in the way of a screed about, say, "The Absolute in Practical Life." The Bishop would come in excellently; he deserves all praises, and my only hesitation about

[1] November 18. [2] November 21.

singing them is that the conjunction between the "Infidel" and the Churchman is just what the blatant platform Dissenters who had been at him would like. I don't want to serve the Bishop, for whom I have a great liking and respect, as the bear served his sleeping master, when he smashed his nose in driving an unfortunate fly away!

By the way, has the Bishop published his speech or sermon? I have only seen a newspaper report.

Soon after this, he proposed to come to town and talk over the article with Mr. Knowles. The latter sent him a telegram—reply paid—asking him to fix a day. The answer named a day of the week and a day of the month which did not agree; whereupon Mr. Knowles wrote by the safer medium of the post for an explanation, thinking that the post-office clerks must have bungled the message, and received the following reply:—

3 JEVINGTON GARDENS, EASTBOURNE,
Nov. 26, 1889.

MY DEAR KNOWLES—May jackasses sit upon the graves of all telegraph clerks! But the boys are worse, and I shall have to write to the P.-M.-General about the little wretch who brought your telegram the other day, when my mind was deeply absorbed in the concoction of an article for *the* Review of our age.

The creature read my answer, for he made me pay three halfpence extra (I believe he spent it on toffy), and yet was so stupid as not to see that meaning to fix next Monday or Tuesday, I opened my diary to give the dates in order that there should be no mistake, and found Monday 28 and Tuesday 29.

And I suppose the little beast would say he did not know I opened it in October instead of November!

I hate such mean ways. Hang all telegraph boys!—Ever yours very faithfully, T. H. HUXLEY.

Monday December 2, if you have nothing against it, and lunch if Mrs. Knowles will give me some.

The article was finished by the middle of December and duly sent to the editor, under the title of "Rousseau and Rousseauism." But fearing that this title would scarcely attract attention among the working-men for whom it was specially designed, Mr. Knowles suggested instead the "Natural Inequality of Men," under which name it actually appeared in January. So, too, in the case of a companion

article in March, the editorial pen was responsible for the change from the arid possibilities of "Capital and Labour" to the more attractive title of "Capital the Mother of Labour."

With regard to this article and a further project of extending his discussion of the subject, he writes:—

3 JEVINGTON GARDENS, EASTBOURNE,
Dec. 14, 1889.

MY DEAR KNOWLES—I am very glad you think the article will go. It is longer than I intended, but I cannot accuse myself of having wasted words, and I have left out several things that might have been said, but which can come in by and by.

As to title, do as you like, but that you propose does not seem to me quite to hit the mark. "Political Humbug: Liberty and Equality," struck me as adequate, but my wife declares it is improper. "Political Fictions" might be supposed to refer to Dizzie's novels! How about "The Politics of the Imagination: Liberty and Inequality?"

I should like to have some general title that would do for the "letters" which I see I shall have to write. I think I will make six of them after the fashion of my "Working Men's Lectures," as thus: (1) Liberty and Equality; (2) Rights of Man; (3) Property; (4) Malthus; (5) Government, the province of the State; (6) Law-making and Law-breaking.

I understand you will let me republish them, as soon as the last is out, in a cheap form. I am not sure I will not put them in the form of "Lectures" rather than "Letters."

Did you ever read Henry George's book "Progress and Poverty"? It is more damneder nonsense than poor Rousseau's blether. And to think of the popularity of the book! But I ought to be grateful, as I can cut and come again at this wonderful dish.

The mischief of it is I do not see how I am to finish the introduction to my Essays, unless I put off sending you a second dose until March.

I will send back the revise as quickly as possible.—Ever yours very truly, T. H. HUXLEY.

You do not tell me that there is anything to which Spencer can object, so I suppose there is nothing.

And in an undated letter to Sir J. Hooker, he says:—

I am glad you think well of the "Human Inequality" paper. My wife has persuaded me to follow it up with a view to making a sort of "Primer of Politics" for the masses—by and by. "There's

no telling what you may come to, my boy," said the Bishop who reproved his son for staring at John Kemble, and I may be a pamphleteer yet! But really it is time that somebody should treat the people to common sense.

However, immediately after the appearance of this first article on Human Inequality, he changed his mind about the Letters to Working Men, and resolved to continue what he had to say in the form of essays in the *Nineteenth Century*.

He then judged it not unprofitable to call public attention to the fallacies which first found their way into practical politics through the disciples of Rousseau; one of those speculators of whom he remarks (i. 312) that "busied with deduction from their ideal 'ought to be,' they overlooked the 'what has been,' the 'what is,' and the 'what can be.'" "Many a long year ago," he says in *Natural Rights and Political Rights* (i. 336), "I fondly imagined that Hume and Kant and Hamilton having slain the 'Absolute,' the thing must, in decency, decease. Yet, at the present time, the same hypostatised negation, sometimes thinly disguised under a new name, goes about in broad daylight, in company with the dogmas of absolute ethics, political and other, and seems to be as lively as ever." This was to his mind one of those instances of wrong thinking which lead to wrong acting—the postulating a general principle based upon insufficient data, and the deduction from it of many and far-reaching practical consequences. This he had always strongly opposed. His essay of 1871, "Administrative Nihilism," was directed against *a priori* individualism; and now he proceeded to restate the arguments against *a priori* political reasoning in general, which seemed to have been forgotten or overlooked, especially by the advocates of compulsory socialism. And here it is possible to show in some detail the care he took, as was his way, to refresh his knowledge and bring it up to date, before writing on any special point. It is interesting to see how thoroughly he went to work, even in a subject with which he was already fairly acquainted. As in the controversy of 1889 I find a list of near a score of books consulted, so here one note-book contains an analysis of the origin and

early course of the French Revolution, especially in relation to the speculations of the theorists; the declaration of the rights of man in 1789 is followed by parallels from Mably's *Droits et Devoirs du Citoyen* and *De la Législation*, and by a full transcript of the 1793 Declaration, with notes on Robespierre's speech at the Convention a fortnight later. There are copious notes from Dunoyer, who is quoted in the article, while the references to Rocquain's *Esprit Révolutionnaire* led to an English translation of the work being undertaken, to which he contributed a short preface in 1891.

It was the same with other studies. He loved to visualise his object clearly. The framework of what he wished to say would always be drawn out first. In any historical matter he always worked with a map. In natural history he well knew the importance of studying distribution and its bearing upon other problems; in civil history he would draw maps to illustrate either the conditions of a period or the spread of a civilising nation. For instance, among sketches of the sort which remain, I have one of the Hellenic world, marked off in 25-mile circles from Delos as centre; and a similar one for the Phœnician world, starting from Tyre. Sketch maps of Palestine and Mesopotamia, with notes from the best authorities on the geography of the two countries, belong in all probability to the articles on "The Flood" and "Hasisadra's Adventure." To realise clearly the size, position, and relation of the parts to the whole, was the mechanical instinct of the engineer which was so strong in him.

The four articles which followed in quick succession on "The Natural Inequality of Man," "Natural and Political Rights," "Capital the Mother of Labour," and "Government," appeared in the January, February, March, and May numbers of the *Nineteenth Century*, and, as was said above, are directed against *a priori* reasoning in social philosophy. The first, which appeared simultaneously with Mr. Herbert Spencer's article on "Justice" in the *Nineteenth Century*, assails, on the ground of fact and history, the dictum that men are born free and equal, and have a natural right to freedom and equality, so that property and political rights are a matter of contract. History denies that they thus originated; and, in fact, "proclaim human equality as loudly as you like, Witless

will serve his brother." Yet, in justice to Rousseau and the influence he wielded, he adds :—

> It is not to be forgotten that what we call rational grounds for our beliefs are often extremely irrational attempts to justify our instincts.
>
> Thus if, in their plain and obvious sense, the doctrines which Rousseau advanced are so easily upset, it is probable that he had in his mind something which is different from that sense.
>
> When they sought speculative grounds to justify the empirical truth
>
> that it is desirable, in the interests of society, that all men should be as free as possible, consistently with those interests, and that they should all be equally bound by the ethical and legal obligations which are essential to social existence, "the philosophers," as is the fashion of speculators, scorned to remain on the safe if humble ground of experience, and preferred to prophesy from the sublime cloudland of the *a priori*.

The second of these articles is an examination of Henry George's doctrines as set forth in *Progress and Poverty*. His relation to the physiocrats is shown in a preliminary analysis of the term "natural rights which have no wrongs," and are antecedent to morality, from which analysis are drawn the results of confounding natural with moral rights.

Here again is the note of justice to an argument in an unsound shape (p. 369): "There is no greater mistake than the hasty conclusion that opinions are worthless because they are badly argued." And a trifling abatement of the universal and exclusive form of Henry George's principle may make it true, while even unamended it may lead to opposite conclusions—to the justification of several ownership in land as well as in any other form of property.

The third essay of the series, "Capital the Mother of Labour" (*Coll. Ess.* ix. 147), was an application of biological methods to social problems, designed to show that the extreme claims of labour as against capital are ill-founded.

In the last article, "Government," he traces the two extreme developments of absolute ethics, as shown in anarchy and regimentation, or unrestrained individualism and compulsory socialism. The key to the position, of course, lies

in the examination of the premisses upon which these superstructures are raised, and history shows that—

> So far from the preservation of liberty and property and the securing of equal rights being the chief and most conspicuous object aimed at by the archaic politics of which we know anything, it would be a good deal nearer the truth to say that they were federated absolute monarchies, the chief purpose of which was the maintenance of an established church for the worship of the family ancestors.

These articles stirred up critics of every sort and kind; socialists who denounced him as an individualist, land nationalisers who had not realised the difference between communal and national ownership, or men who denounced him as an arm-chair cynic, careless of the poor and ignorant of the meaning of labour. Mr. Spencer considered the chief attack to be directed against his position; the regimental socialists as against theirs, and

> as an attempt to justify those who, content with the present, are opposed to all endeavours to bring about any fundamental change in our social arrangements (*ib.* p. 423).

So far from this, he continues:—

> Those who have had the patience to follow me to the end will, I trust, have become aware that my aim has been altogether different. Even the best of modern civilisations appears to me to exhibit a condition of mankind which neither embodies any worthy ideal nor even possesses the merit of stability. I do not hesitate to express my opinion that, if there is no hope of a large improvement of the condition of the greater part of the human family; if it is true that the increase of knowledge, the winning of a greater dominion over Nature which is its consequence, and the wealth which follows upon that dominion, are to make no difference in the extent and the intensity of Want, with its concomitant physical and moral degradation, among the masses of the people, I should hail the advent of some kindly comet, which would sweep the whole affair away, as a desirable consummation. What profits it to the human Prometheus that he has stolen the fire of heaven to be his servant, and that the spirits of the earth and of the air obey him, if the vulture of pauperism is eternally to tear his very vitals and keep him on the brink of destruction?
>
> Assuredly, if I believed that any of the schemes hitherto proposed for bringing about social amelioration were likely to attain their end, I should think what remains to me of life well spent in

furthering it. But my interest in these questions did not begin the day before yesterday; and, whether right or wrong, it is no hasty conclusion of mine that we have small chance of doing rightly in this matter (or indeed in any other) unless we think rightly. Further, that we shall never think rightly in politics until we have cleared our minds of delusions, and more especially of the philosophical delusions which, as I have endeavoured to show, have infested political thought for centuries. My main purpose has been to contribute my mite towards this essential preliminary operation. Ground must be cleared and levelled before a building can be properly commenced; the labour of the navvy is as necessary as that of the architect, however much less honoured; and it has been my humble endeavour to grub up those old stumps of the *a priori* which stand in the way of the very foundations of a sane political philosophy. To those who think that questions of the kind I have been discussing have merely an academic interest, let me suggest once more that a century ago Robespierre and St. Just proved that the way of answering them may have extremely practical consequences.

Without pretending to offer any off-hand solution for so vast a problem, he suggests two points in conclusion. One, that in considering the matter we should proceed from the known to the unknown, and take warning from the results of either extreme in self-government or the government of a family; the other, that the central point is "the fact that the natural order of things—the order, that is to say, as unmodified by human effort—does not tend to bring about what we understand as welfare." The population question has first to be faced.

The following letters cover the period up to the trip to the Canaries, already alluded to:—

3 JEVINGTON GARDENS, EASTBOURNE,
Jan. 6, 1890.

MY DEAR FOSTER—That capital photograph reached me just as we were going up to town (invited for the holidays by our parents), and I put it in my bag to remind me to write to you. Need I say that I brought it back again without having had the grace to send a line of thanks? By way of making my peace, I have told the Fine Art Society to send you a copy of the engraving of my sweet self. I have not had it framed—firstly, because it is a hideous nuisance to be obliged to hang a frame one may not like; and secondly, because by possibility you might like some other portrait better, in

which case, if you will tell me, I will send that other. I should like you to have something by way of reminder of T. H. H.

When Harry[1] has done his work at Bart's at the end of March I am going to give him a run before he settles down to practice. Probably we shall go to the Canaries. I hear that the man who knows most about them is Dr. Guillemard, a Cambridge man. "Kennst du ihn wohl?" Perhaps he might give me a wrinkle.

With our united best wishes to you all—Ever yours very faithfully, T. H. HUXLEY.

EASTBOURNE, *Jan.* 13, 1890.

MY DEAR HOOKER— . . . We missed you on the 2nd, though you were quite right not to come in that beastly weather.

My boy Harry has had a very sharp attack of influenza at Bartholomew's, and came down to us to convalesce a week ago, very much pulled down. I hope you will keep clear of it.

H.'s work at the hospital is over at the end of March, and before the influenza business I was going to give him a run for a month or six weeks before he settled down to practice. We shall go to the Canaries as soon in April as possible. Are you minded to take a look at Teneriffe? Only 4½ days' sea—good ships.—Ever yours affectionately, T. H. HUXLEY.

However, Sir J. Hooker was unable to join "the excursion to the Isles of the Blest."

EASTBOURNE, *Jan.* 27, 1890.

MY DEAR FOSTER—People have been at me to publish my notice of Darwin in *P.R.S.* in a separate form.

If you have no objection, will you apply to the Council for me for the requisite permission?

But if you *do* see any objection, I would rather not make the request.

I think if I republish it I will add the *Times* article of 1859 to it. Omega and Alpha!

Hope you are flourishing. We shall be up for a few days next week.—Ever yours very faithfully, T. H. HUXLEY.

EASTBOURNE, *Jan.* 31, 1890.

MY DEAR FOSTER—Mind you let me know what points you think want expanding in the Darwin obituary when we meet.

We go to town on Tuesday for a few days, and I will meet you anywhere or anywhen you like. Could you come and dine with us at 4 P.M. on Thursday? If so, please let me know at once, that E. may kill the fatted calf.

[1] His younger son.

Harry has been and gone and done it. We heard he had gone to Yorkshire, and were anxious, thinking that at the very least a relapse after his influenza (which he had sharply) had occurred.

But the complaint was one with more serious *sequelæ* still. Don't know the young lady, but the youth has a wise head on his shoulders, and though that did not prevent Solomon from overdoing the business, I have every faith in his choice.

Dr. Guillemard has kindly sent me a lot of valuable information; but as I suggested to my boy yesterday, he may find Yorkshire air more wholesome than that of the Canaries, and it is ten to one we don't go after all.—Ever yours, T. H. H.

TO HIS YOUNGER SON

EASTBOURNE, *Jan.* 30, 1890.

YOU DEAR OLD HUMBUG OF A BOY—Here we have been mourning over the relapse of influenza, which alone, as we said, could have torn you from your duties, and all the while it was nothing but an attack of palpitation such as young people are liable to and seem none the worse for after all. We are as happy that you are happy as you can be yourself, though from your letter that seems saying a great deal. I am prepared to be the young lady's slave; pray tell her that I am a model father-in-law, with my love. (By the way, you might mention her name; it is a miserable detail, I know, but would be interesting.) Please add that she is humbly solicited to grant leave of absence for the Teneriffe trip, unless she thinks Northallerton air more invigorating.—Ever your loving dad,

T. H. HUXLEY.

On April 3, accompanied by his son, he left London on board the *Aorangi*. At Plymouth he had time to meet his friend W. F. Collier, and to visit the Zoological Station, while, "to my great satisfaction," he writes, "I received a revise (*i.e.* of 'Capital the Mother of Labour') for the May *Nineteenth Century*—from Knowles. They must have looked sharp at the printing-office."

It did not take him long to recover his sea-legs, and he thoroughly enjoyed even the rougher days when the rolling of the ship was too much for other people. The day before reaching Teneriffe he writes:—

I have not felt so well for a long time. I do nothing, have a prodigious appetite, and Harry declares I am getting fat in the face.

Santa Cruz was reached early on April 10, and in the afternoon he proceeded to Laguna, which he made his headquarters for a week. That day he walked 10 miles, the next 15, and the third 20 in the course of the day. He notes finding the characteristic Euphorbia and Heaths of the Canaries; notes, too, one or two visitations of dyspepsia from indigestible food. He writes from Laguna:—

From all that people with whom we meet tell me, I gather that the usual massive lies about health resorts pervade the accounts of Teneriffe. Santa Cruz would reduce me to jelly in a week, and I hear that Orotava is worse—stifling. Guimar, whither we go to-morrow, is warranted to be dry and everlasting sunshine. We shall see. One of the people staying in the house said they had rain there for a fortnight together. . . . I am all right now, and walked some 15 miles up hill and down dale to-day, and I am not more than comfortably tired. However, I am not going to try the peak. I find it cannot be done without a night out at a considerable height when the thermometer commonly goes down below freezing, and I am not going to run that risk for the chance of seeing even the famous shadows.

By some mischance, no letters from home reached him till the 26th, and he writes from Guimar on the 23rd:—

A lady who lives here told me yesterday that a post-mistress at one place was in the habit of taking off the stamps and turning the letters on one side! But that luckily is not a particular dodge with ours.

We drove over here on the 17th. It is a very picturesque place 1000 feet up in the midst of a great amphitheatre of high hills, facing north, orange-trees laden with fruit, date palms and bananas are in the garden, and there is lovely sunshine all day long. Altogether the climate is far the best I have found anywhere here, and the house, which is that of a Spanish Marquesa, only opened as a hotel this winter, is very comfortable. I am sitting with the window wide open at nine o'clock at night, and the stars flash as if the sky were Australian.

On Saturday we had a splendid excursion up to the top of the pass that leads from here up to the other side of the island. Road in the proper sense there was none, and the track incredibly bad, worse than any Alpine path owing to the loose irregular stones. The mules, however, pick their way like cats, and you have only to hold on. The pass is 6000 feet high, and we ascended still higher. Fortune favoured us. It was a lovely day and the clouds lay in a

great sheet a thousand feet below. The peak, clear in the blue sky, rose up bare and majestic 5000 feet out of as desolate a desert clothed with the stiff retama shrubs (a sort of broom) as you can well imagine. It took us three hours and a half to get up, passing for a good deal of the time through a kind of low brush of white and red cistuses in full bloom. We saw Palma on one side, and Grand Canary on the other, beyond the layer of clouds which enveloped all the lower part of the island. Coming down was worse than going up, and we walked a good part of the way, getting back about six. About seven hours in the saddle and walking.

You never saw anything like the improvement in Harry. He is burnt deep red; he says my nose is of the same hue, and at the end of the journey he raced Gurilio, our guide, who understands no word of English any more than we do Spanish, but we are quite intimate nevertheless.[1]

He reiterates his distress at not getting letters from his wife: "Certainly I will never run the risk of being so long without—never again." When, after all, the delayed letters reached him on his way back from the expedition to the Cañadas, thanks to a traveller who brought them up from Laguna, he writes (April 24):—

Catch me going out of reach of letters again. I have been horridly anxious. Nobody—children or any one else—can be to me what you are. Ulysses preferred his old woman to immortality, and this absence has led me to see that he was as wise in that as in other things. . . .

Here is a novel description of an hotel at Puerto Orotava:—

It is very pretty to look at, but all draughts. I compare it to the air of a big wash-house with all the doors open, and it was agreed that the likeness was exact.

I have no account of the visit to the Cañadas, "the one thing worth seeing there." But on May 2 he sailed for Madeira by the *German*, feeling already "ten years younger" for his holiday. On the 3rd he writes:—

[1] My brother indeed averred that his language of signs was far more effectual than the Spanish, which my father persisted in trying upon the inhabitants. This guide, by the way, was very sceptical as to any Englishman being equal to walking the seventeen miles, much less beating him in a race over the stony track. His experience was entirely limited to invalids.

The last time I was in this place was in 1846. All my life lies between the two visits. I was then twenty-one and a half, and I shall be sixty-five to-morrow. The place looks to me to have grown a good deal, but I believe it is chiefly English residents whose villas dot the hill. There were no woods forty-four years ago. Now there is one, I am told, to Camera do Lobos nearly five miles long. That is the measure of Portuguese progress in half a century. Moreover, the men have left off wearing their pigtail caps and the women their hoods.

TO HIS YOUNGEST DAUGHTER

BELLA VISTA HOTEL, FUNCHAL,
May 6, 1890.

DEAREST BABS—This comes wishing you many happy returns of the day, though a little late in the arrival. Harry sends his love, and desires me to say that he took care to write a letter which should arrive in time, but unfortunately forgot to mention the birthday in it! So I think, on the whole, I have the pull of him. We ought to be back about the 18th or 19th, as I have put my name down for places in the *Conway Castle*, which is to call here on the 12th, and I do not suppose she will be full. In the meanwhile, we shall fill up the time by a trip to the other side of the island, on which we start to-morrow morning at 7.30. You have to take your own provisions and rugs to sleep upon and under, as the fleas *là bas* are said to be unusually fine and active. We start quite a procession with a couple of horses, a guide, and two men (owners of the nags) to carry the baggage; and I suspect that before to-morrow night we shall have made acquaintance with some remarkably bad apologies for roads. But the horses here seem to prefer going up bad staircases at speed (with a man hanging on by the tail to steer), and if you only stick to them they land you all right. I have developed so much prowess in this line that I think of coming out in the character of Buffalo Bill on my return. Hands and face of both of us are done to a good burnt sienna, and a few hours more or less in the saddle don't count. I do not think either of us have been so well for years.

You will have heard of our doings in Teneriffe from M——. The Cañadas there is the one thing worth seeing, altogether unique. As a health resort I should say the place is a fraud—always excepting Guimar—and that, excellent for people in good health, is wholly unfit for a real invalid, who must either go uphill or downhill over the worst of roads if he leaves the hotel.

The air here is like that of South Devon at its best—very soft, but not stifling as at Orotava. We had a capital expedition yesterday to the Grand Corral—the ancient volcanic crater in the middle of the island with walls some 3000 feet high all scarred and furrowed

by ravines, and overgrown with rich vegetation. There is a little village at the bottom of it which I should esteem as a retreat if I wished to be out of sight and hearing of the pomps and vanities of this world. By the way, I have been pretty well out of hearing of everything as it is, for I only had three letters from M—— while we were in Teneriffe, and not one here up to this date. After I had made all my arrangements to start to-morrow I heard that a mail would be in at noon. So the letters will have to follow us in the afternoon by one of the men, who will wait for them.

We went to-day to lunch with Mr. Blandy, the head of the principal shipping agency here, whose wife is the daughter of my successor at the Fishery Office. —— has called upon me. What an effusive bore he is! But I believe he was very kind to poor Clifford, and restrained my unregenerate impatience of that kind of creature.

Well, our trip has done us both a world of good; but I am getting homesick, and shall rejoice to be back again. I hope that Joyce is flourishing, and Jack satisfied with the hanging of his pictures, and that a millionaire has insisted on buying the picture and adding a bonus. Our best love to you all.—Ever your loving

PATER.

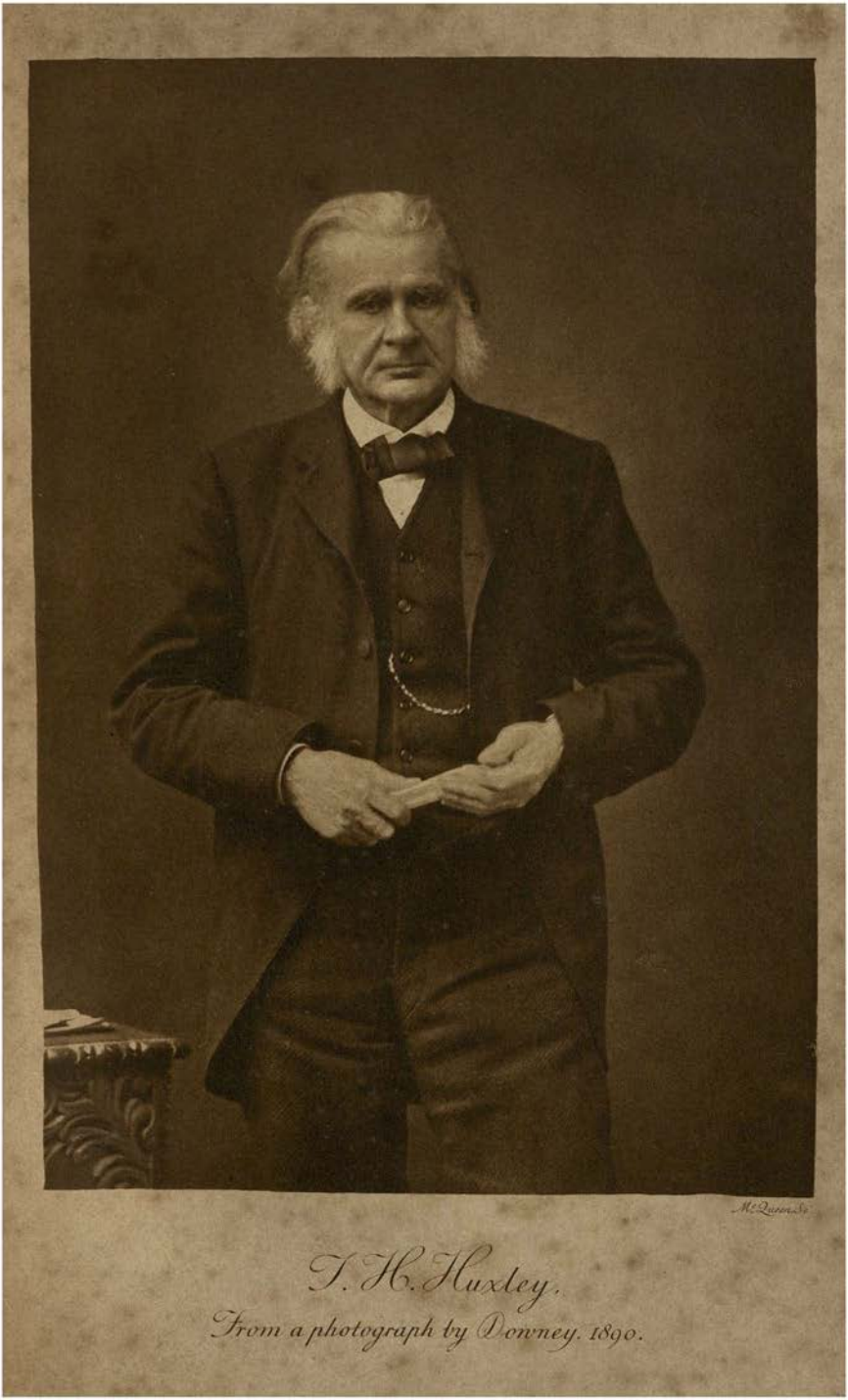
Don't know M——'s whereabouts. But if she is with you, say I wrote her a long screed (No. 8) and posted it to-day—with my love as a model husband and complete letter-writer.

On returning home he found that the Linnean medal had been awarded him.

4 MARLBOROUGH PLACE,
May 18, 1890.

MY DEAR HOOKER—How's a' wi' you? My boy and I came back from Madeira yesterday in great feather. As for myself, riding about on mules, or horses, for six to ten hours at a stretch—burning in sun or soaking in rain—over the most entirely breakneck roads and tracts I have ever made acquaintance with, except perhaps in Morocco—has proved a most excellent tonic, cathartic, and alterative all in one. Existence of heart and stomach are matters of faith, not of knowledge, with me at present. I hope it may last, and I have had such a sickener of invalidism that my intention is to keep severely out of all imprudences.

But what is a man to do if his friends take advantage of his absence, and go giving him gold medals behind his back? That you have been an accomplice in this nefarious plot—mine own familiar friend whom I trusted and trust—is not to be denied. Well, it is very pleasant to have toil that is now all ancient history remembered, and I shall go to the meeting and the dinner and make



T. H. Huxley.

From a photograph by Downey. 1890.

my speech in spite of as many possible devils of dyspepsia as there are plates and dishes on the table.

We were lucky in getting in for nothing worse than heavy rolling, either out or in. Teneriffe is well worth seeing. The Cañadas is something quite by itself, a bit of Egypt 6000 feet up with a bare volcanic cone, or rather long barrow sticking up 6000 feet in the middle of it.

Otherwise, Madeira is vastly superior. I rode across from Funchal to Sao Vicente, up to Paul da Serra, then along the coast to Santa Anna, and back from Sta. Anna to Funchal. I have seen nothing comparable except in Mauritius, nor anything anywhere like the road by the cliffs from Sao Vicente to Sta. Anna. Lucky for me that my ancient nautical habit of sticking on to a horse came back. A good deal of the road is like a bad staircase, with no particular banisters, and a well of 1000 feet with the sea at the bottom. Your heart would rejoice over the great heaths. I saw one, the bole of which split into nearly equal trunks; and one of these was just a metre in circumference, and had a head as big as a moderate-sized ash. Gorse in full flower, up to 12 or 15 feet high. On the whole a singular absence of flowering herbs except *Cinerarias* and, especially in Teneriffe, *Echium*. I did not chance to see a *Euphorbia* in Madeira, though I believe there are some. In Teneriffe they are everywhere in queer shapes, and there was a thing that mimicked the commonest *Euphorbia* but had no milk, which I will ask you about when I see you. The *Euphorbias* were all in flower, but this thing had none. But you will have had enough of my scrawl.—Ever yours affectionately,

T. H. HUXLEY.

CHAPTER XVI

1890-91

THREE letters of the first half of the year may conveniently be placed here. The first is to Tyndall, who had just been delivering an anti-Gladstonian speech at Belfast. The opening reference must be to some newspaper paragraph which I have not been able to trace, just as the second is to a paragraph in 1876, not long after Tyndall's marriage, which described Huxley as starting for America with his titled bride.

3 JEVINGTON GARDENS, EASTBOURNE,
Feb. 24, 1890.

MY DEAR TYNDALL—Put down the three half-pints and the two dozen to the partnership account. Ever since the "titled bride" business I have given up the struggle against the popular belief that you and I constitute a firm.

It's very hard on me in the decline of life to have a lively young partner who thinks nothing of rushing six or seven hundred miles to perform a war-dance on the sainted G.O.M., and takes the scalp of Historicus as a *hors d'œuvre.*

All of which doubtless goes down to my account just as my poor innocent articles confer a reputation for long-suffering mildness on you.

Well! well! there is no justice in this world! With our best love to you both—Ever yours, T. H. HUXLEY.

(The confusion in the popular mind continued steadily, so that at last, when Tyndall died, Huxley received the doubtful honour of a funeral sermon.)

Dr. Pelseneer, to whom the next letter is addressed, is a Belgian morphologist, and an authority upon the Mollusca. He it was who afterwards completed Huxley's unfinished memoir on Spirula for the *Challenger* report.

4 MARLBOROUGH PLACE,
June 10, 1890.

DEAR DR. PELSENEER—I gave directions yesterday for the packing up and sending to your address of the specimens of *Trigonia*, and I trust that they will reach you safely.

I am rejoiced that you are about to take up the subject. I was but a beginner when I worked at *Trigonia*, and I had always promised myself that I would try to make good the many deficiencies of my little sketch. But three or four years ago my health gave way completely, and though I have recovered (no less to my own astonishment than to that of the doctors) I am compelled to live out of London and to abstain from all work which involves much labour.

Thus science has got so far ahead of me that I hesitate to say much about a difficult morphological question—all the more, as old men like myself should be on their guard against over-much tenderness for their own speculations. And I am conscious of a great tenderness for those contained in my ancient memoir on the "Morphology of the Cephalous Mollusca." Certainly I am entirely disposed to agree with you that the Gasteropods and the Lamellibranchs spring from a common root—nearly represented by the Chiton—especially by a hypothetical *Chiton* with one shell plate.

I always thought *Nucula* the key to the Lamellibranchs, and I am very glad you have come to that conclusion on such much better evidence.—I am, dear Dr. Pelseneer, yours very faithfully,

T. H. HUXLEY.

Towards the end of June he went for a week to Salisbury, taking long walks in the neighbourhood, and exploring the town and cathedral, which he confessed himself ashamed never to have seen before.

He characteristically fixes its date in his memory by noting that the main part of it was completed when Dante was a year old.

THE WHITE HART, SALISBURY,
June 22, 1890.

MY DEAR DONNELLY—Couldn't stand any more London, so bolted here yesterday morning, and here I shall probably stop for the next few days.

I have been trying any time the last thirty years to see Stonehenge, and this time I mean to do it. I should have gone to-day, but the weather was not promising, so I spent my Sunday morning

in Old Sarum—that blessed old tumulus with nine (or was it eleven ?) burgesses that used to send two members to Parliament when I was a child. Really you Radicals are of some use after all!

Poor old Smyth's[1] death is just what I expected, though I did not think the catastrophe was so imminent.

Peace be with him; he never did justice to his very considerable abilities, but he was a good fellow and a fine old crusted Conservative.

I suppose it will be necessary to declare the vacancy and put somebody in his place before long.

I learned before I started that Smyth was to be buried in Cornwall, so there is no question of attending at his funeral.

I am the last of the original Jermyn Street gang left in the school now—Ultimus Romanorum!—Ever yours very faithfully,

T. H. HUXLEY.

This trip was taken by way of a holiday after the writing of an article, which appeared in the *Nineteenth Century* for July 1890. It was called "The Lights of the Church and the Light of Science," and may be considered as written in fulfilment of the plan spoken of in the letter to Mr. Clodd (p. 230). Its subject was the necessary dependence of Christian theology upon the historical accuracy of the Old Testament; its occasion, the publication of a sermon in which, as a counterblast to Lux Mundi, Canon Liddon declared that accuracy to be sanctioned by the use made of the Old Testament by Jesus Christ, and bade his hearers close their ears against any suggestions impairing the credit of those Jewish Scriptures which have received the stamp of His Divine authority.

Pointing out that, as in other branches of history, so here the historical accuracy of early tradition was abandoned even by conservative critics, who at all understood the nature of the problems involved, Huxley proceeded to examine the story of the Flood, and to show that the difficulties were little less in treating it—like the reconcilers—as a partial than as a universal deluge. Then he discussed the origin of the story, and criticised the attempt of the essayist in Lux

[1] Warington Wilkinson Smyth (1817-1890), the geologist and mineralogist. In 1851 he was appointed Lecturer on Mining and Mineralogy at the Royal School of Mines. After the lectureships were separated in 1881, he retained the former until his death. He was knighted in 1887.

Mundi to treat this and similar stories as "types," which must be valueless if typical of no underlying reality. These things are of moment in speculative thought, for if Adam be not an historical character, if the story of the Fall be but a type, the basis of Pauline theology is shaken; they are of moment practically, for it is the story of the Creation which is referred to in the "speech (Matt. xix. 5) unhappily famous for the legal oppression to which it has been wrongfully forced to lend itself" in the marriage laws.

In July 1890, Sir J. G. T. Sinclair wrote to him, calling his attention to a statement of Babbage's that after a certain point his famous calculating machine, contrary to all expectation, suddenly introduced a new principle of numeration into a series of numbers,[1] and asking what effect this phenomenon had upon the theory of Induction. Huxley replied as follows:—

GRAND HOTEL, EASTBOURNE,
July 21, 1890.

DEAR SIR—I knew Mr. Babbage, and am quite sure that he was not the man to say anything on the topic of calculating machines which he could not justify.

---

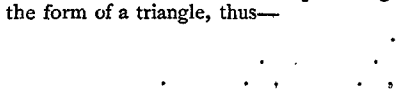
[1] Extract from Babbage's Ninth Bridgewater Treatise.

Babbage shows that a calculating machine can be constructed which, after working in a correct and orderly manner up to 100,000,000, then leaps, and instead of continuing the chain of numbers unbroken, goes at once to 100,010,002. "The law which seemed at first to govern the series failed at the hundred million and second term. This term is larger than we expected by 10,000. The law thus changes—

100,000,001	100,100,005
100,010,002	100,150,006
100,030,003	100,210,007
100,060,004	100,280,008.

For a hundred or even a thousand terms they continued to follow the new law relating to the triangular numbers, but after watching them for 2761 terms we find that this law fails at the 2762nd term.

If we continue to observe we shall discover another law then coming into action which also is different, dependent, but in a different manner, on triangular numbers because a number of points agreeing with their term may be placed in the form of a triangle, thus—



(one, three, six, ten).

This will continue through about 1430 terms, when a new law is again introduced over about 950 terms, and this too, like its predecessors, fails and gives place to other laws which appear at different intervals."

I do not see that what he says affects the philosophy of induction as rightly understood. No induction, however broad its basis, can confer certainty—in the strict sense of the word. The experience of the whole human race through innumerable years has shown that stones unsupported fall to the ground, but that does not make it certain that any day next week unsupported stones will not move the other way. All that it does justify is the very strong expectation, which hitherto has been invariably verified, that they will do just the contrary.

Only one absolute certainty is possible to man—namely, that at any given moment the feeling which he has exists.

All other so-called certainties are beliefs of greater or less intensity.

Do not suppose that I am following Abernethy's famous prescription, "take my pills," if I refer you to an essay of mine on "Descartes," and a little book on Hume, for the fuller discussion of these points. Hume's argument against miracles turns altogether on the fallacy that induction can give certainty in the strict sense.

We poor mortals have to be content with hope and belief in all matters past and present—our sole certainty is momentary.—I am yours faithfully, T. H. HUXLEY.

Sir J. G. T. Sinclair, Bart.

Except for a last visit to London to pack his books, which proved a heavier undertaking than he had reckoned upon, Huxley did not leave Eastbourne this autumn, refusing Sir J. Donnelly's hospitable invitation to stay with him in Surrey during the move, of which he exclaims :—

Thank Heaven that is my last move—except to a still smaller residence of a subterranean character!

GRAND HOTEL, EASTBOURNE,
Sept. 19, 1890.

MY DEAR DONNELLY—And my books—and watch-dog business generally?

How is that to be transacted whether as in-patient or out-patient at Firdale? Much hospitality hath made thee mad.

Seriously, it's not to be done nohow. What between papers that don't come, and profligate bracket manufacturers who keep you waiting for months and then send the wrong things—and a general tendency of everybody to do nothing right or something wrong—it is as much as the two of us will do—to get in, and all in the course of the next three weeks.

Of course my wife has no business to go to London to superin-

tend the packing—but I should like to see anybody stop her. However, she has got the faithful Minnie to do the actual work; and swears by all her Gods and Goddesses she will only direct.

It would only make her unhappy if I did not make pretend to believe, and hope no harm may come of it.—*Tout à vous*,

T. H. HUXLEY.

Another discussion which sprang up in the *Times*, upon Medical Education, evoked a letter from him (*Times*, August 7), urging that the preliminary training ought to be much more thorough and exact. The student at his first coming is so completely habituated to learn only from books or oral teaching, that the attempt to learn from things and to get his knowledge at first hand is something new and strange. Thus a large proportion of medical students spend much of their first year in learning how to learn, and when they have done that, in acquiring the preliminary scientific knowledge, with which, under any rational system of education, they would have come provided.

He urged, too, that they should have received a proper literary education instead of a sham acquaintance with Latin, and insisted, as he had so often done, on the literary wealth of their own language.

Every one has his own ideas of what a liberal education ought to include, and a correspondent wrote to ask him, among other things, whether he did not think the higher mathematics ought to be included. He replied :—

GRAND HOTEL, EASTBOURNE,
Aug. 16, 1890.

I think mathematical training highly desirable, but advanced mathematics, I am afraid, would be too great a burden in proportion to its utility, to the ordinary student.

I fully agree with you that the incapacity of teachers is the weak point in the London schools. But what is to be expected when a man accepts a lectureship in a medical school simply as a grappling-iron by which he may hold on until he gets a hospital appointment?

Medical education in London will never be what it ought to be, until the "Institutes of Medicine," as the Scotch call them, are taught in only two or three well-found institutions—while the hospital

schools are confined to the teaching of practical medicine, surgery, obstetrics, and so on.

The following letters illustrate Huxley's keenness to correct any misrepresentation of his opinions from a weighty source, and the way in which, without abating his just claims, he could make the peace gracefully.

In October Dr. Abbott delivered an address on "Illusions," in which, without, of course, mentioning names, he drew an unmistakable picture of Huxley as a thorough pessimist. A very brief report appeared in the *Times* of October 9, together with a leading article upon the subject. Huxley thereupon wrote to the *Times* a letter which throws light both upon his early days and his later opinions:—

The article on "Illusions" in the *Times* of to-day induces me to notice the remarkable exemplification of them to which you have drawn public attention. The Rev. Dr. Abbott has pointed the moral of his discourse by a reference to a living man, the delicacy of which will be widely and justly appreciated. I have reason to believe that I am acquainted with this person, somewhat intimately, though I can by no means call myself his best friend—far from it.

If I am right, I can affirm that this poor fellow did not escape from the "narrow school in which he was brought up" at nineteen, but more than two years later; and, as he pursued his studies in London, perhaps he had as much opportunities for "fruitful converse with friends and equals," to say nothing of superiors, as he would have enjoyed elsewhere.

Moreover, whether the naval officers with whom he consorted were book-learned or not, they were emphatically men, trained to face realities and to have a wholesome contempt for mere talkers. Any one of them was worth a wilderness of phrase-crammed undergraduates. Indeed, I have heard my misguided acquaintance declare that he regards his four years' training under the hard conditions and the sharp discipline of his cruise as an education of inestimable value.

As to being a "keen-witted pessimist out and out," the Rev. Dr. Abbott's "horrid example" has shown me the following sentence:—"Pessimism is as little consonant with the facts of sentient existence as optimism." He says he published it in 1888, in an article on "Industrial Development," to be seen in the *Nineteenth Century*. But no doubt this is another illusion. No superior person, brought up "in the Universities," to boot, could possibly have invented a myth so circumstantial.

The end of the correspondence was quite amicable. Dr. Abbott explained that he had taken his facts from the recently published "Autobiography," and that the reporters had wonderfully altered what he really said by large omissions. In a second letter (*Times*, October 11) Huxley says:—

I am much obliged to Dr. Abbott for his courteous explanation. I myself have suffered so many things at the hands of so many reporters—of whom it may too often be said that their "faith, unfaithful, makes them falsely true"—that I can fully enter into what his feelings must have been when he contemplated the picture of his discourse, in which the lights on "raw midshipmen," "pessimist out and out," "devil take the hindmost," and "Heine's dragoon," were so high, while the "good things" he was kind enough to say about me lay in the deep shadow of the invisible. And I can assure Dr. Abbott that I should not have dreamed of noticing the report of his interesting lecture, which I read when it appeared, had it not been made the subject of the leading article which drew the attention of all the world to it on the following day.

I was well aware that Dr. Abbott must have founded his remarks on the brief notice of my life which (without my knowledge) has been thrust into its present ridiculous position among biographies of eminent musicians; and most undoubtedly anything I have said there is public property. But erroneous suppositions imaginatively connected with what I have said appear to me to stand upon a different footing, especially when they are interspersed with remarks injurious to my early friends. Some of the "raw midshipmen and unlearned naval officers" of whom Dr. Abbott speaks, in terms which he certainly did not find in my "autobiography," are, I am glad to say, still alive, and are performing, or have performed, valuable services to their country. I wonder what Dr. Abbott would think, and perhaps say, if his youthful University friends were spoken of as "raw curates and unlearned country squires."

When David Hume's housemaid was wroth because somebody chalked up "St. David's" on his house, the philosopher is said to have remarked,—"Never mind, lassie, better men than I have been made saints of before now." And, perhaps, if I had recollected that "better men than I have been made texts of before now," a slight flavour of wrath which may be perceptible would have vanished from my first letter. If Dr. Abbott has found any phrase of mine too strong, I beg him to set it against "out and out pessimist" and "Heine's dragoon," and let us cry quits. He is the last person with whom I should wish to quarrel.

Two interesting criticisms of books follow; one *The*

First Three Gospels, by the Rev. Estlin Carpenter; the other on *Use and Disuse*, directed against the doctrine of use-inheritance, by Mr. Platt Ball, who not only sent the book but appealed to him for advice as to his future course in undertaking a larger work on the evolution of man.

GRAND HOTEL, EASTBOURNE,
Oct. 11, 1890.

MY DEAR MR. CARPENTER—Accept my best thanks for *The First Three Gospels*, which strikes me as an admirable exposition of the case, full, clear, and calm. Indeed the latter quality gives it here and there a touch of humour. You say the most damaging things in a way so gentle that the orthodox reader must feel like the eels who were skinned by the fair Molly—lost between pain and admiration.

I am certainly glad to see that the book has reached a second edition; it will do yeoman's service to the cause of right reason.

A quondam friend of mine was in the habit of sending me his proofs, and I sometimes wrote on them "no objection except to the whole"; and I am afraid that you will think what I am about to say comes to pretty much the same thing—at least if I am right in the supposition that a passage in your first preface (p. vii.) states your fundamental position, and that you conceive that when criticism has done its uttermost there still remains evidence that the personality of Jesus was the leading cause—the *conditio sine qua non*—of the evolution of Christianity from Judaism.

I long thought so, and having a strong dislike to belittle the heroic figures of history, I held by the notion as long as I could, but I find it melting away.

I cannot see that the moral and religious ideal of early Christianity is new—on the other hand, it seems to me to be implicitly and explicitly contained in the early prophetic Judaism and the later Hellenised Judaism; and though it is quite true that the new vitality of the old ideal manifested in early Christianity demands "an adequate historic cause," I would suggest that the word "cause" may mislead if it is not carefully defined.

Medical philosophy draws a most useful and necessary distinction between "exciting" and "predisposing" causes—and nowhere is it more needful to keep this distinction in mind than in history—and especially in estimating the action of individuals on the course of human affairs. Platonic and Stoical philosophy—prophetic liberalism—the strong democratic socialism of the Jewish political system—the existence of innumerable sodalities for religious and social purposes—had thrown the ancient world into a state of unstable equilibrium. With such predisposing causes at work, the exciting

cause of enormous changes might be relatively insignificant. The powder was there—a child might throw the match which should blow up the whole concern.

I do not want to seem irreverent, still less depreciatory, of noble men, but it strikes me that in the present case the Nazarenes were the match and Paul the child.

An ingrained habit of trying to explain the unknown by the known leads me to find the key to Nazarenism in Quakerism. It is impossible to read the early history of the Friends without seeing that George Fox was a person who exerted extraordinary influence over the men with whom he came in contact; and it is equally impossible (at least for me) to discover in his copious remains an original thought.

Yet what with the corruption of the Stuarts, the Phariseeism of the Puritans, and the Sadduceeism of the Church, England was in such a state, that before his death he had gathered about him a vast body of devoted followers, whose patient endurance of persecution is a marvel. Moreover, the Quakers have exercised a prodigious influence on later English life.

But I have scribbled a great deal too much already. You will see what I mean.

To Mr. W. Platt Ball

Grand Hotel, Eastbourne,
Oct. 27, 1890.

Dear Sir—I have been through your book, which has greatly interested me, at a hand-gallop; and I have by no means given it the attention it deserves. But the day after to-morrow I shall be going into a new house here, and it may be some time before I settle down to work in it—so that I prefer to seem hasty, rather than indifferent to your book and still more to your letter.

As to the book, in the first place. The only criticism I have to offer—in the ordinary depreciatory sense of the word—is that pp. 128-137 seem to me to require reconsideration, partly from a substantial and partly from a tactical point of view. There is much that is disputable on the one hand, and not necessary to your argument on the other.

Otherwise it seems to me that the case could hardly be better stated. Here are a few notes and queries that have occurred to me.

P. 41. Extinction of Tasmanians—rather due to the British colonist, who was the main agent of their extirpation, I fancy.

P. 67. Birds' sternums are a great deal more than surfaces of

origin for the pectoral muscles—*e.g.* moveable lid of respiratory bellows. This not taken into account by Darwin.

P. 85. "Inferiority of senses of Europeans" is, I believe, a pure delusion. Prof. Marsh told me of feats of American trappers equal to any savage doings. It is a question of attention. Consider wool-sorters, tea-tasters, shepherds who know every sheep personally, etc. etc.

P. 85. I do not understand about the infant's sole; since all men become bipeds, all must exert pressure on sole. There is no disuse.

P. 88. Has not "muscardine" been substituted for "pebrine"? I have always considered this a very striking case. Here is apparent inheritance of a diseased state through the mother only, quite inexplicable till Pasteur discovered the rationale.

P. 155. Have you considered that State Socialism (for which I have little enough love) may be a product of Natural Selection? The societies of Bees and Ants exhibit socialism *in excelsis*.

The unlucky substitution of "survival of fittest" for "natural selection" has done much harm in consequence of the ambiguity of "fittest"—which many take to mean "best" or "highest"—whereas natural selection may work towards degradation *vide epizoa*.

You do not refer to the male mamma—which becomes functional once in many million cases, see the curious records of Gynæcomasty. Here practical disuse in the male ever since the origin of the mammalia has not abolished the mamma or destroyed its functional potentiality in extremely rare cases.

I absolutely disbelieve in use-inheritance as the evidence stands. Spencer is bound to it *a priori*—his psychology goes to pieces without it.

Now as to the letter. I am no pessimist—but also no optimist. The world might be much worse, and it might be much better. Of moral purpose I see no trace in Nature. That is an article of exclusively human manufacture—and very much to our credit.

If you will accept the results of the experience of an old man who has had a very chequered existence—and has nothing to hope for except a few years of quiet downhill—there is nothing of permanent value (putting aside a few human affections), nothing that satisfies quiet reflection—except the sense of having worked according to one's capacity and light, to make things clear and get rid of cant and shams of all sorts. That was the lesson I learned from Carlyle's books when I was a boy, and it has stuck by me all my life.

Therefore, my advice to you is go ahead. You may make more of failing to get money, and of succeeding in getting abuse—until such time in your life as (if you are teachable) you have ceased to care much about either. The job you propose to undertake is a big one and will tax all your energies and all your patience.

But, if it were my case, I should take my chance of failing in a worthy task rather than of succeeding in lower things.

And if at any time I can be of use to you (even to the answering of letters) let me know. But in truth I am getting rusty in science —from disuse.—Ever yours very faithfully, T. H. HUXLEY.

P.S.—Yes—Mr. Gladstone has dug up the hatchet. We shall see who gets the scalps.

By the way, you have not referred to plants, which are a stronghold for you. What is the good of use inheritance, say, in orchids?

The interests which had formerly been divided between biology and other branches of science and philosophy, were diverted from the one channel only to run stronger in the rest. Stagnation was the one thing impossible to him; his rest was mental activity without excessive physical fatigue; and he felt he still had a useful purpose to serve, as a friend put it, in patrolling his beat with a vigilant eye to the loose characters of thought. Thus he writes on September 29 to Sir J. Hooker:—

I wish quietude of mind were possible to me. But without something to do that amuses me and does not involve too much labour, I become quite unendurable—to myself and everybody else.

Providence has, I believe, specially devolved on Gladstone, Gore, and Co. the function of keeping "'ome 'appy" for me.

I really can't give up tormenting *ces drôles*.

However, I have been toiling at a tremendously scientific article about the "Aryan question" absolutely devoid of blasphemy.

This article appeared in the November number of the *Nineteenth Century* (*Coll. Essays*, vii. 271) and treats the question from a biological point of view, with the warning to readers that it is essentially a speculation based upon facts, but not assuredly proved. It starts from the racial characteristics of skull and stature, not from simply philological considerations, and arrives at a form of the "Sarmatian" theory of Aryan origins. And for fear lest he should be supposed to take sides in the question of race and language, or race and civilisation, he remarks:—

The combination of swarthiness with stature above the average and a long skull, confer upon me the serene impartiality of a mongrel.

THE GRAND HOTEL, EASTBOURNE,
Aug. 12, 1890.

MY DEAR EVANS—I have read your address returned herewith with a great deal of interest, as I happen to have been amusing myself lately with reviewing the "Aryan" question according to the new lights (or darknesses).

I have only two or three remarks to offer on the places I have marked A and B.

As to A, I would not state the case so strongly against the probabilities of finding pliocene man. A pliocene *Homo* skeleton might analogically be expected to differ no more from that of modern men than the Œningen *Canis* from modern *Canes*, or pliocene horses from modern horses. If so, he would most undoubtedly be a man—genus *Homo*—even if you made him a distinct species. For my part I should by no means be astonished to find the genus *Homo* represented in the Miocene, say the Neanderthal man with rather smaller brain capacity, longer arms and more moveable great toe, but at most specifically different.

As to B, I rather think there were people who fought the fallacy of language being a test of race before Broca—among them thy servant—who got into considerable hot water on that subject for a lecture on the forefathers and forerunners of the English people, delivered in 1870. Taylor says that Cuno was the first to insist upon the proposition that race is not co-extensive with language in 1871. That is all stuff. The same thesis had been maintained before I took it up, but I cannot remember by whom.

Won't you refer to the Blackmore Museum? I was very much struck with it when at Salisbury the other day.

Hope they gave you a better lunch at Gloucester than we did here. We'll treat you better next time in our own den. With the wife's kindest regards—Ever yours very faithfully,

T. H. HUXLEY.

The remark in a preceding letter about "Gladstone, Gore, and Co." turned out to be prophetic as well as retrospective. Mr. Gladstone published this autumn in *Good Words* his "Impregnable Rock of Holy Scripture," containing an attack upon Huxley's position as taken up in their previous controversy of 1889.

The debate now turned upon the story of the Gadarene swine. The question at issue was not, at first sight, one of vital importance, and one critic at least remarked that at their age Mr. Gladstone and Professor Huxley might be better occupied than in fighting over the Gadarene pigs:—

If these two famous swine were the only parties to the suit, I for my part (writes Huxley, *Coll. Essays*, v. 414) should fully admit the justice of the rebuke. But the real issue (he contends) is whether the men of the nineteenth century are to adopt the demonology of the men of the first century, as divinely revealed truth, or to reject it as degrading falsity.

A lively encounter followed :—

The G.O.M. is not murdered (he writes on November 20), only "fillipped with a three-man beetle," as the fat knight has it.

This refers to the forthcoming article in the December *Nineteenth Century*, "The Keepers of the Herd of Swine," which was followed in March 1891 by "Mr. Gladstone's Controversial Methods" (see *Coll. Essays*, v. 366 *sqq.*), the rejoinder to Mr. Gladstone's reply in February.

The scope of this controversy was enlarged by the intervention in the January *Nineteenth Century* of the Duke of Argyll, to whom he devoted the concluding paragraphs of his March article. But it was scarcely well under way when another, accompanied by much greater effusion of ink and passion, sprang up in the columns of the *Times*. His share in it, published in 1891 as a pamphlet under the title of "Social Diseases and Worse Remedies," is to be found in *Coll. Essays*, ix. 237.

I have a new row on hand *in re* Salvation Army (he writes on December 2)! It's all Mrs. ——'s fault; she offered the money.

In fact, a lady who was preparing to subscribe £1000 to "General" Booth's "Darkest England" scheme, begged Huxley first to give her his opinion of the scheme and the likelihood of its being properly carried out. A careful examination of "Darkest England" and other authorities on the subject convinced him that it was most unwise to create an organisation whose absolute obedience to an irresponsible leader might some day become a serious danger to the State; that the reforms proposed were already being undertaken by other bodies, which would be crippled if this scheme were floated; and that the financial arrangements of the Army were not such as provide guarantees for the proper administration of the funds subscribed :—

And if the thing goes on much longer, if Booth establishes his Bank, you will have a crash some of these fine days, comparable only to Law's Mississippi business, but unfortunately ruining only the poor.

On the same day he writes to his eldest son :—

HODESLEA, EASTBOURNE,
Dec. 8, 1890.

Attacking the Salvation Army may look like the advance of a forlorn hope, but this old dog has never yet let go after fixing his teeth into anything or anybody, and he is not going to begin now. And it is only a question of holding on. Looking at Plumptre's letter exposing the Bank swindle.

The *Times*, too, is behaving like a brick. This world is not a very lovely place, but down at the bottom, as old Carlyle preached, veracity does really lie, and will show itself if people won't be impatient.

No sooner had he begun to express these opinions in the columns of the *Times* than additional information of all kinds poured in upon him, especially from within the Army, much of it private for fear of injury to the writers if it were discovered that they had written to expose abuses; indeed in one case the writer had thought better of even appending his signature to his letter, and had cut off his name from the foot of it, alleging that correspondence was not inviolable. So far were these persons from feeling hostility to the organisation to which they belonged, that one at least hailed the Professor as the divinely-appointed redeemer of the Army, whose criticism was to bring it back to its pristine purity.

TO HIS ELDER SON

HODESLEA, EASTBOURNE,
Jan. 8, 1891.

DEAR LENS—It is very jolly to think of J. and you paying us a visit. It is proper, also, the eldest son should hansel the house.

Is the Mr. Sidgwick who took up the cudgels for me so gallantly in the *St. James'* one of your Sidgwicks? If so, I wish you would thank him on my account. (The letter was capital.)[1]

[1] Mr. William C. Sidgwick had written (January 4) an indignant letter to protest against the heading of an article in the *Speaker*, "Professor Huxley as

Generally people like me to pull the chestnuts out of the fire for them, but don't care to take any share in the burning of the fingers.

But the Boothites are hard hit, and may be allowed to cry out.

I begin to think that they must be right in saying that the Devil is at work to destroy them. No other theory sufficiently accounts for the way they play into my hands. Poor Clibborn-Booth has a long—columns long—letter in the *Times* to-day, in which, all unbeknownst to himself, he proves my case.

I do believe it is a veritable case of the herd of swine, and I shall have to admit the probability of that miracle.

Love to J. and Co. from us all.—Ever your affectionate

PATER.

HODESLEA, EASTBOURNE,
Jan. 11, 1891.

MY DEAR MR. CLODD—I am very much obliged to you for the number of the *St. James's Gazette*, which I had not seen. The leading article expresses exactly the same conclusions as those at which I had myself arrived from the study of the deed of 1878. But of course I was not going to entangle myself in a legal discussion. However, I have reason to know that the question will be dealt with by a highly qualified legal expert before long. The more I see of the operations of headquarters the worse they look. I get some of my most valuable information and heartiest encouragement from officers of the Salvation Army; and I knew, in this way, of Smith's resignation a couple of days before it was announced! But the poor fellows are so afraid of spies and consequent persecution, that some implore me not to notice their letters, and all pledge me to secrecy. So that I am Vice-Fontanelle with my hand full of truth, while I can only open my little finger.

It is a case of one down and t'other come on, just now. "——" will get his deserts in due time. But, oh dear, what a waste of time for a man who has not much to look to. No; "waste" is the wrong word; it's useful, but I wish that somebody else would do it and leave me to my books.

My wife desires her kind regards. I am happy to say she is now remarkably well. If you are this way, pray look in at our Hermitage.—Yours very faithfully, T. H. HUXLEY.

Titus Oates." "To this monster of iniquity the *Speaker* compares an honourable English gentleman, because he has ventured to dissuade his countrymen from giving money to Mr. William Booth. . . . Mr. Huxley's views on theology may be wrong, but nobody doubts that he honestly holds them; they do not bring Mr. Huxley wealth and honours, nor do they cause the murder of the innocent. To insinuate a resemblance which you dare not state openly is an outrage on common decency. . . ."

HODESLEA, EASTBOURNE,
Jan. 30, 1891.

MY DEAR HOOKER—I trust I have done with Booth and Co. at last. What an ass a man is to try to prevent his fellow-creatures from being humbugged! Surely I am old enough to know better. I have not been so well abused for an age. It's quite like old times.

And now I have to settle accounts with the duke and the G.O.M. I wonder when the wicked will let me be at peace.—Ever yours affectionately, T. H. HUXLEY.

Other letters touch upon the politics of the hour, especially upon the sudden and dramatic fall of Parnell. He could not but admire the power and determination of the man, and his political methods, an admiration rashly interpreted by some journalist as admiration of the objects to which these political methods were applied. (See p. 126.)

GRAND HOTEL, EASTBOURNE,
Nov. 26, 1890.

MY DEAR LECKY—Very many thanks for your two volumes, which I rejoice to have, especially as a present from you. I was only waiting until we were settled in our new house—as I hope we shall be this time next week—to add them to the set which already adorn my shelves, and I promise myself soon to enjoy the reading of them.

The Unionist cause is looking up. What a strange thing it is that the Irish malcontents are always sold, one way or the other, by their leaders.

I wonder if the G.O.M. ever swears! Pity if he can't have that relief just now.

With our united kind regards to Mrs. Lecky and yourself—Ever yours very faithfully, T. H. HUXLEY.

GRAND HOTEL, EASTBOURNE,
Nov. 29, 1890.

MY DEAR HOOKER—I have filled up and sent your and my copies of entry for Athenæum.

Carpenter has written the best popular statement I know of of the results of criticism, in a little book called *The First Three Gospels*, which is well worth reading. [See p. 266.]

I have promised to go to R.S. dinner and propose Stokes' health on Monday, but if the weather holds out as Arctic as it is

now, I shall not dare to venture. The driving east wind, blowing the snow before it here, has been awful; for ten years they have had nothing like it. I am glad to say that my little house turns out to be warm. We go in next Wednesday, and I fear I cannot be in town on Thursday even if the weather permits.

I have had pleurisy that was dangerous and not painful, then p. that was painful and not dangerous; there is only one further combination, and I don't want that.

Politics now are immensely interesting. There must be a depth of blackguardism in me, for I cannot help admiring Parnell. I prophesy that it is Gladstone who will retire for a while, and then come back to Parnell's heel like a whipped hound. His letter was carefully full of loopholes.—Ever yours affectionately,

T. H. HUXLEY.

HODESLEA, EASTBOURNE,
Dec. 2, 1890.

MY DEAR HOOKER . . . —The question of questions now is whether the Unionists will have the sense to carry a measure settling the land question at once. If they do that, I do not believe it will be in the power of man to stir them further. And my belief is that Parnell will be quite content with that solution. He does not want to be made a nonentity by Davitt or the Irish Americans.

But what ingrained liars they all are! That is the bottom of all Irish trouble. Fancy Healy and Sexton going to Dublin to swear eternal fidelity to their leader, and now openly declaring that they only did so because they believed he would resign.—Ever yours affectionately, T. H. HUXLEY.

HODESLEA, *Jan.* 10, 1891.

MY DEAR FOSTER—I am trying to bring the Booth business to an end so far as I am concerned, but it's like getting a wolf by the ears; you can't let him go exactly when you like.

But the result is quite worth the trouble. Booth, Stead, Tillett, Manning and Co. have their little game spoilt for the present.

You cannot imagine the quantity of letters I get from the Salvation Army subordinates, thanking me and telling me all sorts of stories in strict confidence. The poor devils are frightened out of their lives by headquarter spies. Some beg me not to reply, as their letters are opened.

I knew that saints were not bad hands at lying before; but these Booth people beat Banagher.

Then there is —— awaits skinning, and I believe the G.O.M. is to be upon me! Oh for a quiet life.—Ever yours faithfully,

T. H. HUXLEY.

But by February 17 the Booth business was over, the final rejoinder to Mr. Gladstone sent to press; and he writes to Sir J. Hooker:—

Please the pigs, I have now done with them—wiped my mouth, and am going to be good—till next time.

But in truth I am as sick of controversy as a confectioner's boy of tarts.

I rather think I shall set up as a political prophet. Gladstone and all the rest are coming to heel to their master.

Years ago one of the present leaders of the anti-Parnellites said to me: "Gladstone is always in the hands of somebody stronger than himself; formerly it was Bright, now it is Parnell."

From a Water-Colour by Reginald Barrett.

THE STUDY AT HODESLEA.

CHAPTER XVII

1890-91

THE new house at Eastbourne has been several times referred to. As usually happens, the move was considerably delayed by the slowness of the workmen; it did not actually take place till the beginning of December.

He writes to his daughter, Mrs. Roller, who also had just moved into a new house :—

You have all my sympathies on the buy, buy question. I never knew before that when you go into a new house money runs out at the heels of your boots. On former occasions, I have been too busy to observe the fact. But I am convinced now that it is a law of nature.

The origin of the name given to the house appears from the following letter :—

GRAND HOTEL, EASTBOURNE,
Oct. 15, 1890.

MY DEAR FOSTER—Best thanks for the third part of the "Physiology," which I found when I ran up to town for a day or two last week. What a grind that book must be!

How's a' wi' you? Let me have a line.

We ought to have been in our house a month ago, but fitters, paperers, and polishers are like bugs or cockroaches, you may easily get 'em in, but getting 'em out is the deuce. However, I hope to clear them out by the end of this week, and get in by the end of next week.

One is obliged to have names for houses here. Mine will be "Hodeslea," which is as near as I can go to "Hodesleia," the poetical original shape of my very ugly name.

There was a noble scion of the house of Huxley of Huxley who, having burgled and done other wrong things (temp. Henry IV.),

asked for benefit of clergy. I expect they gave it him, not in the way he wanted, but in the way they would like to "benefit" a later member of the family.

[Rough sketch of one priest hauling the rope taut over the gallows, while another holds a crucifix before the suspended criminal.]

Between this gentleman and my grandfather there is unfortunately a complete blank, but I have none the less faith in him as my ancestor.

My wife, I am sorry to say, is in town—superintending packing up—no stopping her. I have been very uneasy about her at times, and shall be glad when we are quietly settled down. With kindest regards to Mrs. Foster—Ever yours, T. H. HUXLEY.

His own principal task was in getting his library ready for the move.

Most of my time (he writes on November 16) for the last fortnight has been spent in arranging books and tearing up papers till my back aches and my fingers are sore.

However, he did not take all his books with him. There was a quantity of biological works of all sorts which had accumulated in his library and which he was not likely to use again; these he offered as a parting gift to the Royal College of Science. On December 8, the Registrar conveys to him the thanks of the Council for "the valuable library of biological works," and further informs him that it was resolved—

That the library shall be kept in the room formerly occupied by the Dean, which shall be called "The Huxley Laboratory for Biological Research," and be devoted to the prosecution of original researches in Biological Science, with which the name of Professor Huxley is inseparably associated.

Huxley replied as follows:—

DEAR REGISTRAR—I beg you convey my hearty thanks to the Council for the great kindness of the minute and resolution which you have sent me. My mind has never been greatly set on posthumous fame; but there is no way of keeping memory green which I should like so well as that which they have adopted towards me.

It has been my fate to receive a good deal more vilipending than (I hope) I deserve. If my colleagues, with whom I have worked so long, put too high a value upon my services, perhaps the result may be not far off justice.—Yours very faithfully, T. H. HUXLEY.

In addition to the directly controversial articles in the early part of the year, two other articles or controversial subjects belong to 1891. "Hasisadra's Adventure," published in the *Nineteenth Century* for June, completed his long-contemplated examination of the Flood myth. In this he first discussed the Babylonian form of the legend recorded upon the clay tablets of Assurbanipal—a simpler and less exaggerated form as befits an earlier version, and in its physical details keeping much nearer to the bounds of probability.

The greater part of the article, however, is devoted to a wider question—How far does geological and geographical evidence bear witness to the consequences which must have ensued from a universal flood, or even from one limited to the countries of Mesopotamia? And he comes to the conclusion that these very countries have been singularly free from any great changes of the kind for long geological periods.

The sarcastic references in this article to those singular reasoners who take the possibility of an occurrence to be the same as scientific testimony to the fact of its occurrence, lead up, more or less, to the subject of an essay, "Possibilities and Impossibilities," which appeared in the *Agnostic Annual* for 1892, actually published in October 1891, and to be found in *Collected Essays*, v. 192.

This was a restatement of the fundamental principles of the agnostic position, arising out of the controversies of the last two years upon the demonology of the New Testament. The miraculous is not to be denied as impossible; as Hume said, "Whatever is intelligible and can be distinctly conceived implies no contradiction, and can never be proved false by any demonstrative argument or abstract reasoning *a priori*," and these combinations of phenomena are perfectly conceivable. Moreover, in the progress of knowledge, the miracles of to-day may be science of to-morrow. Improbable they are, certainly, by all experience, and therefore they require specially strong evidence. But this is precisely what they lack; the evidence to them, when examined, turns out to be of doubtful value.

I am anxious (he says) to bring about a clear understanding of the difference between "impossibilities" and "improbabilities,"

because mistakes on this point lay us open to the attacks of ecclesiastical apologists of the type of the late Cardinal Newman. . . .

When it is rightly stated, the Agnostic view of "miracles" is, in my judgment, unassailable. We are *not* justified in the *a priori* assertion that the order of nature, as experience has revealed it to us, cannot change. In arguing about the miraculous, the assumption is illegitimate, because it involves the whole point in dispute. Furthermore, it is an assumption which takes us beyond the range of our faculties. Obviously, no amount of past experience can warrant us in anything more than a correspondingly strong expectation for the present and future. We find, practically, that expectations, based upon careful observations of past events, are, as a rule, trustworthy. We should be foolish indeed not to follow the only guide we have through life. But, for all that, our highest and surest generalisations remain on the level of justifiable expectations; that is, very high probabilities. For my part, I am unable to conceive of an intelligence shaped on the model of that of men, however superior it might be, which could be any better off than our own in this respect; that is, which could possess logically justifiable grounds for certainty about the constancy of the order of things, and therefore be in a position to declare that such and such events are impossible. Some of the old mythologies recognised this clearly enough. Beyond and above Zeus and Odin, there lay the unknown and inscrutable Fate which, one day or other, would crumple up them and the world they ruled to give place to a new order of things.

I sincerely hope that I shall not be accused of Pyrrhonism, or of any desire to weaken the foundations of rational certainty. I have merely desired to point out that rational certainty is one thing, and talk about "impossibilities," or "violation of natural laws," another. Rational certainty rests upon two grounds; the one that the evidence in favour of a given statement is as good as it can be; the other, that such evidence is plainly insufficient. In the former case, the statement is to be taken as true, in the latter as untrue; until something arises to modify the verdict, which, however properly reached, may always be more or less wrong, the best information being never complete, and the best reasoning being liable to fallacy.

To quarrel with the uncertainty that besets us in intellectual affairs would be about as reasonable as to object to live one's life, with due thought for the morrow, because no man can be sure he will be alive an hour hence. Such are the conditions imposed upon us by nature, and we have to make the best of them. And I think that the greatest mistake those of us who are interested in the progress of free thought can make is to overlook these limitations, and to deck ourselves with the dogmatic feathers which are the traditional adornment of our opponents. Let us be content with

rational certainty, leaving irrational certainties to those who like to muddle their minds with them.

As for the difficulty of believing miracles in themselves, he gives in this paper several examples of a favourite saying of his, that Science offers us much greater marvels than the miracles of theology; only the evidence for them is very different.

The following letter was written in acknowledgment of a paper by the Rev. E. McClure, which endeavoured to place the belief in an individual permanence upon the grounds that we know of no leakage anywhere in nature; that matter is not a source, but a transmitter of energy; and that the brain, so far from originating thought, is a mere machine responsive to something external to itself, a revealer of something which it does not produce, like a musical instrument. This "something" is the universal of thought, which is identified with the general λόγος of the fourth gospel. Moral perfection consists in assimilation to this; sin is the falling short of perfect revealing of the eternal λόγος.

Huxley's reply interested his correspondent not only for the brief opinion on the philosophic question, but for the personal touch in the explanation of the motives which had guided his life-work, and his "kind feeling towards such of the clergy as endeavoured to seek honestly for a natural basis to their faith."

HODESLEA, EASTBOURNE,
March 17, 1891.

DEAR MR. MCCLURE — I am very much obliged for your letter, which belongs to a different category from most of those which I receive from your side of the hedge that, unfortunately, separates thinking men.

So far as I know myself, after making due deduction for the ambition of youth and a fiery temper, which ought to (but unfortunately does not) get cooler with age, my sole motive is to get at the truth in all things.

I do not care one straw about fame, present or posthumous, and I loathe notoriety, but I do care to have that desire manifest and recognised.

Your paper deals with a problem which has profoundly interested me for years, but which I take to be insoluble. It would need a book for full discussion. But I offer a remark only on two points.

The doctrine of the conservation of energy tells neither one way nor the other. Energy is the cause of movement of body, *i.e.* things having mass. States of consciousness have no mass, even if they can be conceded to be movable. Therefore even if they are caused by molecular movements, they would not in any way affect the store of energy.

Physical causation need not be the only kind of causation, and when Cabanis said that thought was a function of the brain, in the same way as bile secretion is a *function* of the liver, he blundered philosophically. Bile is a product of the transformation of material energy. But in the mathematical sense of the word "function," thought may be a function of the brain. That is to say, it may arise only when certain physical particles take on a certain order.

By way of a coarse analogy, consider a parallel-sided piece of glass through which light passes. It forms no picture. Shape it so as to be bi-convex, and a picture appears in its focus.

Is not the formation of the picture a "function" of the piece of glass thus shaped?

So, from your own point of view, suppose a mind-stuff—λόγος—a noumenal cosmic light such as is shadowed in the fourth gospel. The brain of a dog will convert it into one set of phenomenal pictures, and the brain of a man into another. But in both cases the result is the consequence of the way in which the respective brains perform their "functions."

Yet one point.

The actions we call sinful are as much the consequence of the order of nature as those we call virtuous. They are part and parcel of the struggle for existence through which all living things have passed, and they have become sins because man alone seeks a higher life in voluntary association.

Therefore the instrument has never been marred; on the contrary, we are trying to get music out of harps, sacbuts, and psalteries, which never were in tune and seemingly never will be.—Ever yours very faithfully, T. H. HUXLEY.

Few years passed without some utterance from Huxley on the subject of education, especially scientific education. This year we have a letter to Professor Ray Lankester touching the science teaching at Oxford.

HODESLEA, EASTBOURNE,
Jan. 28, 1891.

DEAR LANKESTER—I met Foster at the Athenæum when I was in town last week, and we had some talk about your "very gentle" stirring of the Oxford pudding. I asked him to let you know when

occasion offered, that (as I had already said to Burdon Sanderson) I drew a clear line *apud* biology between the medical student and the science student.

With respect to the former, I consider it ought to be kept within strict limits, and made simply a *Vorschule* to human anatomy and physiology.

On the other hand, the man who is going out in natural science ought to have a much larger dose, especially in the direction of morphology. However, from what I understood from Foster, there seems a doubt about the "going out" in *Natural Science*, so I had better confine myself to the medicos. Their burden is already so heavy that I do not want to see it increased by a needless weight even of elementary biology.

Very many thanks for the "Zoological articles" just arrived.—Ever yours very faithfully, T. H. HUXLEY.

Don't write to the *Times* about anything; look at the trouble that comes upon a harmless man for two months, in consequence.

The following letter, which I quote from the *Yorkshire Herald* of April 11, 1891, was written in answer to some enquiries from Mr. J. Harrison, who read a paper on Technical Education as applied to Agriculture, before the Easingwold Agricultural Club:—

I am afraid that my opinion upon the subject of your enquiry is worth very little—my ignorance of practical agriculture being profound. However, there are some general principles which apply to all technical training; the first of these, I think, is that practice is to be learned only by practice. The farmer must be made by and through farm work. I believe I might be able to give you a fair account of a bean plant and of the manner and condition of its growth, but if I were to try to raise a crop of beans, your club would probably laugh consumedly at the result. Nevertheless, I believe that you practical people would be all the better for the scientific knowledge which does not enable me to grow beans. It would keep you from attempting hopeless experiments, and would enable you to take advantage of the innumerable hints which Dame Nature gives to people who live in direct contact with things. And this leads me to the second general principle which I think applies to all technical teaching for school-boys and school-girls, and that is, that they should be led from the observation of the commonest facts to general scientific truths. If I were called upon to frame a course of elementary instruction preparatory to agriculture, I am not sure that I should attempt chemistry, or botany, or physiology or geology, as such. It is a method fraught with the danger of spending too much

time and attention on abstraction and theories, on words and notions instead of things. The history of a bean, of a grain of wheat, of a turnip, of a sheep, of a pig, or of a cow properly treated—with the introduction of the elements of chemistry, physiology, and so on as they come in—would give all the elementary science which is needed for the comprehension of the processes of agriculture in a form easily assimilated by the youthful mind, which loathes everything in the shape of long words and abstract notions, and small blame to it. I am afraid I shall not have helped you very much, but I believe that my suggestions, rough as they are, are in the right direction.

The perversion of the new Chair of English Literature at Oxford to "Middle English" philology was the occasion of the following letter, which appeared in the *Pall Mall Gazette* of October 22, 1891 :—

I fully agree with you that the relation of our Universities to the study of English literature is a matter of great public importance; and I have more than once taken occasion to express my conviction—Firstly, that the works of our great English writers are pre-eminently worthy of being systematically studied in our schools and universities as literature; and secondly, that the establishment of professional chairs of philology, under the name of literature, may be a profit to science, but is really a fraud practised upon letters.

That a young Englishman may be turned out of one of our universities, "epopt and perfect" so far as their system takes him, and yet ignorant of the noble literature which has grown up in those islands during the last three centuries, no less than of the development of the philosophical and political ideas which have most profoundly influenced modern civilisation, is a fact in the history of the nineteenth century which the twentieth will find hard to believe; though, perhaps, it is not more incredible than our current superstition that whoso wishes to write and speak English well should mould his style after the models furnished by classical antiquity. For my part, I venture to doubt the wisdom of attempting to mould one's style by any other process than that of striving after the clear and forcible expression of definite conceptions; in which process the Glassian precept, "first catch your definite conceptions," is probably the most difficult to obey. But still I mark among distinguished contemporary speakers and writers of English, saturated with antiquity, not a few to whom, it seems to me, the study of Hobbes might have taught dignity; of Swift, concision and clearness; of Goldsmith and Defoe, simplicity.

Well, among a hundred young men whose university career is finished, is there one whose attention has ever been directed by his literary instructors to a page of Hobbes, or Swift, or Goldsmith, or

Defoe? In my boyhood we were familiar with *Robinson Crusoe*, *The Vicar of Wakefield*, and *Gulliver's Travels;* and though the mysteries of "Middle English" were hidden from us, my impression is we ran less chance of learning to write and speak the "middling English" of popular orators and headmasters than if we had been perfect in such mysteries and ignorant of those three masterpieces. It has been the fashion to decry the eighteenth century, as young fops laugh at their fathers. But we were there in germ; and a "Professor of Eighteenth Century History and Literature" who knew his business might tell young Englishmen more of that which it is profoundly important they should know, but which at present remains hidden from them, than any other instructor; and, incidentally, they would learn to know good English when they see or hear it—perhaps even to discriminate between slipshod copiousness and true eloquence, and that alone would be a great gain.

The remaining letters of the year are of miscellaneous interest. They show him happily established in his retreat at Eastbourne in very fair health, on his guard against any further repetition of his "jubilee honour" in the shape of his old enemy pleurisy; unable to escape the more insidious attacks of influenza, but well enough on the whole to be in constant good spirits.

HODESLEA, EASTBOURNE,
Jan. 13, 1891.

MY DEAR SKELTON—Many thanks to you for reminding me that there are such things as "Summer Isles" in the universe. The memory of them has been pretty well blotted out here for the last seven weeks. You see some people can retire to "Hermitages" as well as other people; and though even Argyll *cum* Gladstone powers of self-deception could not persuade me that the view from my window is as good as that from yours, yet I do see a fine wavy chalk down with "cwms" and soft turfy ridges, over which an old fellow can stride as far as his legs are good to carry him.

The fact is, that I discovered that staying in London any longer meant for me a very short life, and by no means a merry one. So I got my son-in-law to build me a cottage here, where my wife and I may go down-hill quietly together, and "make our sowls" as the Irish say, solaced by an occasional visit from children and grandchildren.

The deuce of it is, that however much the weary want to be at rest the wicked won't cease from troubling. Hence the occasional skirmishes and alarms which may lead my friends to misdoubt my

absolute detachment from sublunary affairs. Perhaps peace dwells only among the fork-tailed Petrels!

I trust Mrs. Skelton and you are flourishing, and that trouble will keep far from the hospitable doors of Braid through the New Year.—Ever yours very faithfully, T. H. HUXLEY.

No sooner had he settled down in his new country home, than a strange piece of good fortune, such as happens more often in a story-book than in real life, enabled him at one stroke to double his little estate, to keep off the unwelcome approach of the speculative builder, and to give himself scope for the newly-discovered delights of the garden. The sale of the house in Marlborough Place covered the greater part of the cost of Hodeslea; but almost on the very day on which the sale was concluded, he became the possessor of another house at Worthing by the death of Mr. Anthony Rich, the well-known antiquarian. An old man, almost alone in the world, his admiration for the great work done recently in natural science had long since led him to devise his property to Darwin and Huxley, to the one his private fortune, to the other his house and its contents, notably a very interesting library.

As a matter of feeling, Huxley was greatly disinclined to part with this house, Chapel Croft, as soon as it had come into his hands. A year earlier, he might have made it his home; but now he had settled down at Eastbourne, and Chapel Croft, as it stood, was unlikely to find a tenant. Accordingly he sold it early in July, and with the proceeds bought the piece of land adjoining his house. Thus he writes to Sir J. Hooker:—

HODESLEA, EASTBOURNE,
May 17, 1891.

MY DEAR HOOKER—My estate is somewhat of a white elephant. There is about a couple of acres of ground well situated and half of it in the shape of a very pretty lawn and shrubbery, but unluckily, in building the house, dear old Rich thought of his own convenience and not mine (very wrong of him!), and I cannot conceive anybody but an old bachelor or old maid living in it. I do not believe anybody would take it as it stands. No doubt the site is valuable, and it would be well worth while to anybody with plenty of cash to spare to build on to the house and make it useful. But I neither

have the cash, nor do I want the bother. However, Waller is going to look at the place for me and see what can be done. It seems hardly decent to sell it at once; and moreover the value is likely to increase. I suppose at present it is worth £2000, but that is only a guess.

Apropos of naval portrait gallery, can you tell me if there is a portrait of old John Richardson anywhere extant? I always look upon him as the founder of my fortunes, and I want to hang him up (just over your head) on my chimney breast. Voici! [sketch showing the position of the pictures above the fire-place]:—

By your fruits ye shall judge them! My cold was influenza, I have been in the most preposterously weak state ever since; and at last my wife lost patience and called in the doctor, who is screwing me up with nux vomica.

Sound wind and limb otherwise.—Ever yours affectionately,

T. H. HUXLEY.

And again on July 3:—

I have just been offered £2800 for Anthony Rich's place and have accepted it. It is probably worth £3000, but if I were to have it on my hands and sell by auction I should get no more out of the transaction.

I am greatly inclined to put some of the money into a piece of land—a Naboth's vineyard—in front of my house and turn horticulturist. I find nailing up creepers a delightful occupation.

In the same letter he describes two meetings with old friends:—

Last Friday I ran down to Hindhead to see Tyndall. He was very much better than I hoped to find him, after such a long and serious illness, quite bright and "Tyndalloid," and not aged as I feared he would be. . . . The local doctor happened to be there during my visit and spoke very confidently of his speedy recovery. The leg is all right again, and he even talks of Switzerland, but I begged Mrs. Tyndall to persuade him to keep quiet and within reach of home and skilled medical attendance.

Saturday to Monday we were at Down, after six or seven years' interruption of our wonted visits. It was very pleasant if rather sad. Mrs. Darwin is wonderfully well—naturally aged—but quite bright and cheerful as usual. Old Parslow turned up on Sunday, just eighty, but still fairly hale. *Fuimus fuimus!*

[Parslow was the old butler who had been in Mr. Darwin's service for many years.]

TO HIS DAUGHTER, MRS. ROLLER

HODESLEA, EASTBOURNE,
May 5, 1891.

You dear people must have entered into a conspiracy, as I had letters from all yesterday. I have never been so set up before, and begin to think that fathers (like port) must improve in quality with age. (No irreverent jokes about their getting crusty, Miss.)

Julian and Joyce taken together may perhaps give a faint idea of my perfections as a child. I have not only a distinct recollection of being noticed on the score of my good looks, but my mother used to remind me painfully of them in my later years, looking at me mournfully and saying, "And you were such a pretty boy!"

Much as he would have liked to visit the Maloja again this year, the state of his wife's health forbade such a long journey. He writes just after his attack of influenza to Sir M. Foster, who had been suffering in the same way:—

HODESLEA, *May* 12, 1891.

MY DEAR FOSTER—I was very glad to hear from you. Pray don't get attempting to do anything before you are set up again.

I am in a ridiculous state of weakness, and bless my stars that I have nothing to do. I find it troublesome to do even that.

I wish ballooning had advanced so far as to take people to Maloja, for I do not think my wife ought to undertake such a journey, and yet I believe the high air would do us both more good than anything else. . . .

The University of London scheme appears to be coming to grief, as I never doubted it would.—Ever yours,

T. H. HUXLEY.

So instead of going abroad, he stayed in Eastbourne till the end of August, receiving a short visit from his old friend Jowett, who, though sadly enfeebled by age, still persisted in travelling by himself, and a longer visit from his elder son and his family. But from September 11 to the 26th he and his wife made a trip through the west country, starting from Salisbury, which had so delighted him the year before, and proceeding by way of the Wye valley, which they had not visited since their honeymoon, to Llangollen.

The first stage on the return journey was Chester, whence they made pious pilgrimage to the cradle of his name, Old Huxley Hall, some 9 miles from Chester. Incorporated with a modern farm-house, and forming the present kitchen, are some solid stone walls, part of the old manor-house, now no longer belonging to any one of the name. From here they went to Coventry, where he had lived as a boy, and found the house which his father had occupied still standing.

A letter to an old pupil contains reflections upon the years of work to which he had devoted so much of his energies.

TO PROFESSOR T. JEFFERY PARKER, OTAGO

HODESLEA, EASTBOURNE,
Aug. 11, 1891.

MY DEAR PARKER—It is a long time since your letter reached me, but I was so unwise as to put off answering it until the book arrived and I had read it. The book did not reach me for a long time, and what with one thing and another I have but just finished it. I assure you I am very proud of having my name connected with such a thorough piece of work, no less than touched by the kindness of the dedication.

Looking back from the aged point of view, the life which cost so much wear and tear in the living seems to have effected very little, and it is cheering to be reminded that one has been of some use.

Some years of continued ill-health, involving constant travelling about in search of better conditions than London affords, and long periods of prostration, have driven me quite out of touch with science. And indeed except for a certain toughness of constitution I should have been driven out of touch with terrestrial things altogether.

It is almost indecent in a man at my time of life who has had two attacks of pleurisy, followed by a dilated heart, to be not only above ground but fairly vigorous again. However, I am obliged to mind my P's and Q's; avoid everything like hard work, and live in good air.

The last condition we have achieved by setting up a house close to the downs here; and I begin to think with Candide that "cultivons notre jardin" comprises the whole duty of man.

I was just out of the way of hearing anything about the Uni-

versity College chair; and indeed, beyond attending the Council of the school when necessary, and meetings of Trustees of the British Museum, I rarely go to London.

I have had my innings, and it is now for the younger generation to have theirs.—With best wishes, ever yours very faithfully,

T. H. HUXLEY.

As for being no longer in touch with the world of science, he says the same thing in a note to Sir M. Foster, forwarding an inquiry after a scientific teacher (August 1).

Please read the enclosed, and if you know of anybody suitable please send his name to Mr. Thomas.

I have told him that I am out of the way of knowing, and that you are physiologically omniscient, so don't belie the character!

This year a number of Huxley's essays were translated into French. *Nature* for July 23, 1891 (vol. xliv. p. 272), notes the publication of "Les Sciences Naturelles et l'Éducation," with a short preface by himself, dwelling upon the astonishing advance which had been made in the recognition of science as an instrument of education, but warning the younger generation that the battle is only half won, and bidding them beware of relaxing their efforts before the place of science is entirely assured. In the issue for December 31 (*Nature*, 46, 397), is a notice of "La Place de l'Homme dans la Nature," a re-issue of a translation of more than twenty years before, together with three ethnological essays, newly translated by M. H. de Varigny, to whom the following letters are addressed.

TO H. DE VARIGNY

May 17, 1891.

I am writing to my publishers to send you *Lay Sermons, Critiques, Science and Culture*, and *American Addresses*, pray accept them in expression of my thanks for the pains you are taking about the translation. *Man's Place in Nature* has been out of print for years, so I cannot supply it.

I am quite conscious that the condensed and idiomatic English into which I always try to put my thoughts must present many difficulties to a translator. But a friend of mine who is a much better French scholar than I am, and who looked over two or

three of the essays, told me he thought you had been remarkably successful.

The fact is that I have a great love and respect for my native tongue, and take great pains to use it properly. Sometimes I write essays half-a-dozen times before I can get them into the proper shape; and I believe I become more fastidious as I grow older.

November 25, 1891.

I am very glad you have found your task pleasant, for I am afraid it must have cost you a good deal of trouble to put my ideas into the excellent French dress with which you have provided them. It fits so well that I feel almost as if I might be a candidate for a seat among the immortal forty!

As to the new volume you shall have the refusal of it if you care to have it. But I have my doubts about its acceptability to a French public which I imagine knows little about Bibliolatry and the ways of Protestant clericalism, and cares less.

These essays represent a controversy which has been going on for five or six years about Genesis, the deluge, the miracle of the herd of swine, and the miraculous generally, between Gladstone, the ecclesiastical principal of King's College, various bishops, the writer of Lux Mundi, that spoilt Scotch minister the Duke of Argyll, and myself.

My object has been to stir up my countrymen to think about these things; and the only use of controversy is that it appeals to their love of fighting, and secures their attention.

I shall be very glad to have your book on *Experimental Evolution.* I insisted on the necessity of obtaining experimental proof of the possibility of obtaining virtually infertile breeds from a common stock in 1860 (in one of the essays you have translated). Mr. Tegetmeier made a number of experiments with pigeons some years ago, but could obtain not the least approximation to infertility.

From the first, I told Darwin this was the weak point of his case from the point of view of scientific logic. But, in this matter, we are just where we were thirty years ago, and I am very glad you are going to call attention to the subject.

Sending a copy of the translation soon after to Sir J. Hooker, he writes:—

HODESLEA, EASTBOURNE,
Jan. 11, 1892.

MY DEAR HOOKER—We have been in the middle of snow for the last four days. I shall not venture to London, and if you

deserve the family title of the "judicious," I don't think you will either.

I send you by this post a volume of the French translation of a collection of my essays about Darwinism and Evolution, 1860-76, for which I have written a brief preface. I was really proud of myself when I discovered on re-reading them that I had nothing to alter.

What times those days were! *Fuimus!*—Ever yours affectionately, T. H. HUXLEY.

The same subject of experimental evolution reappears in a letter to Professor Romanes of April 29. A project was on foot for founding an institution in which experiments bearing upon the Darwinian theory could be carried out. After congratulating Professor Romanes upon his recent election to the Athenæum Club, he proceeds:—

In a review of Darwin's *Origin* published in the *Westminster* for 1860 (*Lay Sermons*, pp. 323-24), you will see that I insisted on the logical incompleteness of the theory so long as it was not backed by experimental proof that the cause assumed was competent to produce all the effects required. (See also *Lectures to Working Men*, 1863, pp. 146, 147.) In fact, Darwin used to reproach me sometimes for my pertinacious insistence on the need of experimental verification.

But I hope you are going to choose some other title than "Institut transformiste," which implies that the Institute is pledged to a foregone conclusion, that it is a workshop devoted to the production of a particular kind of article. Moreover, I should say that as a matter of prudence, you had better keep clear of the word "experimental." Would not "Biological Observatory" serve the turn? Of course it does not exclude experiment any more than "Astronomical Observatory" excludes spectrum analysis.

Please think over this. My objection to "Transformist" is very strong.

In August his youngest daughter wrote to him to find out the nature of various "objects of the sea-shore" which she had found on the beach in South Wales. His answers make one wish that there had been more questions.

HODESLEA, EASTBOURNE,
Aug. 14, 1891.

DEAREST BABS—1. "Ornary" or not "ornary" B is merely A turned upside down and viewed with the imperfect appreciation of the mere artistic eye!

2. Your little yellow things are, I expect, egg-cases of dog whelks. You will find a lot of small eggs inside them, one or two of which grow faster than the rest, and eat up their weaker brothers and sisters.

The dog whelk is common on the shores. If you look for something like this [sketch of a terrier coming out of a whelk shell], you will be sure to recognise it.

3. Starfish are *not* born in their proper shape and don't come from your whitish yellow lumps. The thing that comes out of a starfish egg is something like this [sketch], and swims about by its cilia. The starfish proper is formed inside, and it is carried on its back this-uns.

Finally starfish drops off carrying with it t'other one's stomach, so that the subsequent proceedings interest t'other one no more.

4. The ropy sand tubes that make a sort of banks and reefs are houses of worms, that they build up out of sand, shells, and slime. If you knock a lot to pieces you will find worms inside.

5. Now, how do I know what the rooks eat? But there are a lot of unconsidered trifles about, and if you get a good telescope and watch, you will have a glimpse as they hover between sand and rooks' beaks.

It has been blowing more or less of a gale here from the west for weeks—usually cold, often foggy—so that it seems as if summer were going to be late, probably about November.

But we thrive fairly well. L. and J. and their chicks are here and seem to stand the inclemency of the weather pretty fairly. The children are very entertaining.

M—— has been a little complaining, but is as active as usual.

My love to Joyce, and tell her I am glad to hear she has not forgotten her astronomy.

In answer to your enquiry, Leonard says that Trevenen has twenty-five teeth. I have a sort of notion this can be hardly accurate, but never having been a mother can't presume to say.—Our best love to you all.—Ever your loving PATER.

HODESLEA, EASTBOURNE,
Aug. 26, 1891.

DEAREST BABS—'Pears to me your friend is a squid or pen-and-ink fish. *Loligo* among the learned. Probably *Loligo media* which I have taken in that region. They have ten tentacles with suckers round their heads, two much longer than the others. They are close to cuttle-fish, but have a thin horny shell inside them instead of the "cuttle-bone." If you can get one by itself in a tub of water, it is pretty to see how they blush all over and go pale again, owing to little colour-bags in the skin, which expand and contract.

Doubtless they took you for a heron, under the circumstances [sketch of a wader].

With slight intervals it has been blowing a gale from the west here for some months, the memory of man indeed goeth not back to the calm. I have not been really warm more than two days this so-called summer. And everybody prophesied we should be roasted alive here in summer.

We are all flourishing, and send our best love to Jack and you. Tell Joyce the wallflowers have grown quite high in her garden.—Ever your loving PATER.

Politics are not often touched upon in the letters of this period, but an extract from a letter of October 25, 1891, is of interest as giving his reason for supporting a Unionist Government, many of whose tendencies he was far from sympathising with—

The extract from the *Guardian* is wonderful. The Gladstonian tee-to-tum cannot have many more revolutions to make. The only thing left for him now, is to turn Agnostic, declare Homer to be an old bloke of a ballad-monger, and agitate for the prohibition of the study of Greek in all universities. . . .

It is just because I do not want to see our children involved in civil war that I postpone all political considerations to keeping up a Unionist Government.

I may be quite wrong; but right or wrong, it is no question of party. "Rads delight not me nor Tories neither," as Hamlet does not say.

The following letter to Sir M. Foster shows how little Huxley was now able to do in the way of public business without being knocked up:—

HODESLEA, *Oct.* 20, 1891.

MY DEAR FOSTER—If I had known the nature of the proceedings at the College of Physicians yesterday, I should have braved the tedium of listening to a lecture I could not hear in order to see you decorated. Clark had made a point of my going to the dinner,[1] and, worse luck, I had to "say a few words" after it, with the result that I am entirely washed out to-day, and only able to send you the feeblest of congratulations.—Ever yours, T. H. HUXLEY.

The same thing appears in the following to Sir W. H.

[1] *i.e.* at the College of Physicians.

Flower, which is also interesting for his opinion on the question of promotion by seniority :—

HODESLEA, EASTBOURNE,
Oct. 23, 1891.

MY DEAR FLOWER—My "next worst thing" was promoting a weak man to a place of responsibility in lieu of a strong one, on the mere ground of seniority.

Caeteris paribus, or with even approximate equality of qualifications, no doubt seniority ought to count; but it is mere ruin to any service to let it interfere with the promotion of men of marked superiority, especially in the case of offices which involve much responsibility.

I suppose as trustee I may requisition a copy of Woodward's Catalogue. I should like to look a little more carefully at it. . . . We are none the worse for our pleasant glimpse of the world (and his wife) at your house; but I find that speechifying at public dinners is one of the luxuries that I must utterly deny myself. It will take me three weeks' quiet to get over my escapade.—Ever yours very faithfully, T. H. HUXLEY.

CHAPTER XVIII

1892

THE revival of part of the former controversy which he had had with Mr. Gladstone upon the story of creation, made a warlike beginning of an otherwise very peaceful year. Since the middle of December a great correspondence had been going on in the *Times*, consequent upon the famous manifesto of the thirty-eight Anglican clergy touching the question of inspiration and the infallibility of the Bible. Criticism, whether "higher" or otherwise, defended on the one side, was unsparingly denounced on the other. After about a month of this correspondence, Huxley's name was mentioned as one of these critics; whereupon he was attacked by one of the disputants for "misleading the public" by his assertion in the original controversy that while reptiles appear in the geological record before birds, Genesis affirms the contrary; the critic declaring that the word for "creeping things" (rehmes) created on the sixth day, does not refer to reptiles, which are covered by the "moving creatures" (shehretz) used of the first appearance of animal life.

It is interesting to see how, in his reply, Huxley took care to keep the main points at issue separate from the subordinate and unimportant ones. His answer is broken up into four letters. The first (*Times*, January 26) rehearses the original issue between himself and Mr. Gladstone; wherein both sides agreed that the creation of the sixth day included reptiles, so that, formally at least, his position was secure, though there was also a broader ground of difference to be considered. Before proceeding further, he asks his critic whether he admits the existence of the contradiction involved,

and if not, to state his reasons therefor. These reasons were again given on February 1 as the new interpretation of the two Hebrew words already referred to, an interpretation, by the way, which makes the same word stand both for "the vast and various population of the waters" and "for such land animals as mice, weasels, and lizards, great and small."

On February 3 appeared the second letter, in which, setting aside the particular form which his argument against Mr. Gladstone had taken, he described the broad differences between the teachings of Genesis and the teachings of evolution. He left the minor details as to the interpretation of the words in dispute, which did not really affect the main argument, to be dealt with in the next letter of February 4. It was a question with which he had long been familiar, as twenty years before he had, at Dr. Kalisch's request, gone over the proofs of his *Commentary on Leviticus*.

The letter of February 3 is as follows:—

While desirous to waste neither your space nor my own time upon mere misrepresentations of what I have said elsewhere about the relations between modern science and the so-called "Mosaic" cosmogony, it seems needful that I should ask for the opportunity of stating the case once more, as briefly and fairly as I can.

I conceive the first chapter of Genesis to teach—(1) that the species of plants and animals owe their origin to supernatural acts of creation; (2) that these acts took place at such times and in such a manner that all the plants were created first, all the aquatic and aerial animals (notably birds) next, and all terrestrial animals last. I am not aware that any Hebrew scholar denies that these propositions agree with the natural sense of the text. Sixty years ago I was taught, as most people were then taught, that they are guaranteed by Divine authority.

On the other hand, in my judgment, natural science teaches no less distinctly—(1) that the species of animals and plants have originated by a process of natural evolution; (2) that this process has taken place in such a manner that the species of animals and plants, respectively, have come into existence one after another throughout the whole period since they began to exist on the earth; that the species of plants and animals known to us are, as a whole, neither older nor younger the one than the other.

The same holds good of aquatic and aerial species, as a whole, compared with terrestrial species; but birds appear in the geological record later than terrestrial reptiles, and there is every reason to believe that they were evolved from the latter.

Until it is shown that the first two propositions are not contained in the first chapter of Genesis, and that the second pair are not justified by the present condition of our knowledge, I must continue to maintain that natural science and the "Mosaic" account of the origin of animals and plants are in irreconcilable antagonism.

As I greatly desire that this broad issue should not be obscured by the discussion of minor points, I propose to defer what I may have to say about the great "shehetz" and "rehmes" question till to-morrow.

On February 11 he wrote once more, again taking certain broader aspects of the problem presented by the first chapter of Genesis. He expressed his belief, as he had expressed it in 1869, that theism is not logically antagonistic to evolution. If, he continues, the account in Genesis, as Philo of Alexandria held, is only a poem or allegory, where is the proof that any one non-natural interpretation is the right one? and he concludes by pointing out the difficulties in the way of those who, like the famous thirty-eight, assert the infallibility of the Bible as guaranteed by the infallibility of the Church.

Apart from letters and occasional controversy, he published this year only one magazine article and a single volume of collected essays, though he was busy preparing the Romanes Lecture for 1893, the more so because there was some chance that Mr. Gladstone would be unable to deliver the first of the lectures in 1892, and Huxley had promised to be ready to take his place if necessary.

The volume (called *Controverted Questions*) which appeared in 1892, was a collection of the essays of the last few years, mainly controversial, or as he playfully called them, "endeavours to defend a cherished cause," dealing with agnosticism and the demonological and miraculous element in Christianity. That they were controversial in tone no one lamented more than himself; and as in the letter to M. de Varigny, of November 25, 1891, so here in the prologue he apologises for the fact.

This prologue,—of which he writes to a friend, "It cost me more time and pains than any equal number of pages I have ever written,"—was designed to indicate the main question, various aspects of which are dealt with by these seemingly disconnected essays.

The historical evolution of humanity (he writes), which is generally, and I venture to think not unreasonably, regarded as progress, has been, and is being, accompanied by a co-ordinate elimination of the supernatural from its originally large occupation of men's thought. The question—How far is this process to go? is, in my apprehension, the controverted question of our time.

This movement, marked by the claim for the freedom of private judgment, which first came to its fulness in the Renascence, is here sketched out, rising or sinking by turns under the pressure of social and political vicissitudes, from Wiclif's earliest proposal to reduce the Supernaturalism of Christianity within the limits sanctioned by the Scriptures, down to the manifesto in the previous year of the thirty-eight Anglican divines in defence of biblical infallibility, which practically ends in an appeal to the very principle they reject.

But he does not content himself with pointing out the destructive effects of criticism upon the evidence in favour of a "supernature"—"The present incarnation of the spirit of the Renascence," he writes, "differs from its predecessor in the eighteenth century, in that it builds up, as well as pulls down. That of which it has laid the foundation, of which it is already raising the superstructure, is the doctrine of evolution," a doctrine that "is no speculation, but a generalisation of certain facts, which may be observed by any one who will take the necessary trouble." And in a short dozen pages he sketches out that "common body of established truths" to which it is his confident belief that 'all future philosophical and theological speculations will have to accommodate themselves.'"

There is no need to capitulate these; they may be read in *Science and Christian Tradition*, the fifth volume of the Collected Essays, but it is worth noticing that in conclusion, after rejecting "a great many supernaturalistic theories and legends which have no better foundations than those of heathenism," he declares himself as far from wishing to "throw the Bible aside as so much waste paper" as he was at the establishment of the School Board in 1870. As English literature, as world-old history, as moral teaching, as the *Magna Charta* of the poor and of the oppressed,

the most democratic book in the world, he could not spare it. "I do not say," he adds, "that even the highest biblical ideal is exclusive of others or needs no supplement. But I do believe that the human race is not yet, possibly may never be, in a position to dispense with it."

It was this volume that led to the writing of the magazine article referred to above. The republication in it of the "Agnosticism," originally written in reply to an article of Mr. Frederic Harrison's, induced the latter to disclaim in the *Fortnightly Review* the intimate connection assumed to exist between his views and the system of Positivism detailed by Comte, and at the same time to offer the olive branch to his former opponent. But while gratefully accepting the goodwill implied in the offer, Huxley still declared himself unable to "give his assent to a single doctrine which is the peculiar property of Positivism, old or new," nor to agree with Mr. Harrison when he wanted

> to persuade us that agnosticism is only the Court of the Gentiles of the Positivist temple; and that those who profess ignorance about the proper solution of certain speculative problems ought to call themselves Positivists of the Gate, if it happens that they also take a lively interest in social and political questions.

This essay, "An Apologetic Irenicon," contains more than one passage of personal interest, which are the more worth quoting here, as the essay has not been republished. It was to have been included in a tenth volume of collected Essays, along with a number of others which he projected, but never wrote.

Thus, begging the Positivists not to regard him as a rival or competitor in the business of instructing the human race, he says:—

> I aspire to no such elevated and difficult situation. I declare myself not only undesirous of it, but deeply conscious of a constitutional unfitness for it. Age and hygienic necessities bind me to a somewhat anchoritic life in pure air, with abundant leisure to meditate upon the wisdom of Candide's sage aphorism, "Cultivons notre jardin"—especially if the term garden may be taken broadly and applied to the stony and weed-grown ground within my skull, as well as to a few perches of more promising chalk down outside it. In addition to these effectual bars to any of the ambitious pretensions

ascribed to me, there is another: of all possible positions that of master of a school, or leader of a sect, or chief of a party, appears to me to be the most undesirable; in fact, the average British matron cannot look upon followers with a more evil eye than I do. Such acquaintance with the history of thought as I possess, has taught me to regard schools, parties, and sects, as arrangements, the usual effect of which is to perpetuate all that is worst and feeblest in the master's, leader's, or founder's work; or else, as in some cases, to upset it altogether; as a sort of hydrants for extinguishing the fire of genius, and for stifling the flame of high aspirations, the kindling of which has been the chief, perhaps the only, merit of the protagonist of the movement. I have always been, am, and propose to remain a mere scholar. All that I have ever proposed to myself is to say, this and this have I learned; thus and thus have I learned it: go thou and learn better; but do not thrust on my shoulders the responsibility for your own laziness if you elect to take, on my authority, conclusions, the value of which you ought to have tested for yourself.

Again, replying to the reproach that all his public utterances had been of a negative character, that the great problems of human life had been entirely left out of his purview, he defends once more the work of the man who clears the ground for the builders to come after him :—

There is endless backwoodsman's work yet to be done. If "those also serve who only stand and wait," still more do those who sweep and cleanse; and if any man elect to give his strength to the weeder's and scavenger's occupation, I remain of the opinion that his service should be counted acceptable, and that no one has a right to ask more of him than faithful performance of the duties he has undertaken. I venture to count it an improbable suggestion that any such person—a man, let us say, who has well-nigh reached his threescore years and ten, and has graduated in all the faculties of human relationships; who has taken his share in all the deep joys and deeper anxieties which cling about them; who has felt the burden of young lives entrusted to his care, and has stood alone with his dead before the abyss of the eternal—has never had a thought beyond negative criticism. It seems to me incredible that such an one can have done his day's work, always with a light heart, with no sense of responsibility, no terror of that which may appear when the factitious veil of Isis—the thick web of fiction man has woven round nature—is stripped off.

Challenged to state his "mental bias, *pro* or *con*," with

regard to such matters as Creation, Providence, etc., he reiterates his words written thirty-two years before:—

So far back as 1860 I wrote:—

"The doctrine of special creation owes its existence very largely to the supposed necessity of making science accord with the Hebrew cosmogony;" and that the hypothesis of special creation is, in my judgment, a "mere specious mask for our ignorance." Not content with negation, I said:—

"Harmonious order governing eternally continuous progress; the web and woof of matter and force interweaving by slow degrees, without a broken thread, that veil which lies between us and the infinite; that universe which alone we know, or can know; such is the picture which science draws of the world."

. . . Every reader of Goethe will know that the second is little more than a paraphrase of the well-known utterance of the "Zeitgeist" in *Faust*, which surely is something more than a mere negation of the clumsy anthropomorphism of special creation.

Follows a query about "Providence," my answer to which must depend upon what my questioner means by that substantive, whether alone, or qualified by the adjective "moral."

If the doctrine of a Providence is to be taken as the expression, in a way "to be understanded of the people," of the total exclusion of chance from a place even in the most insignificant corner of Nature, if it means the strong conviction that the cosmic process is rational, and the faith that, throughout all duration, unbroken order has reigned in the universe, I not only accept it, but I am disposed to think it the most important of all truths. As it is of more consequence for a citizen to know the law than to be personally acquainted with the features of those who will surely carry it into effect, so this very positive doctrine of Providence, in the sense defined, seems to me far more important than all the theorems of speculative theology. If, further, the doctrine is held to imply that, in some indefinitely remote past aeon, the cosmic process was set going by some entity possessed of intelligence and foresight, similar to our own in kind, however superior in degree, if, consequently, it is held that every event, not merely in our planetary speck, but in untold millions of other worlds, was foreknown before these worlds were, scientific thought, so far as I know anything about it, has nothing to say against that hypothesis. It is, in fact, an anthropomorphic rendering of the doctrine of evolution.

It may be so, but the evidence accessible to us is, to my mind, wholly insufficient to warrant either a positive or a negative conclusion.

He remarks in passing upon the entire exclusion of

"special" providences by this conception of a universal "Providence." As for "moral" providence :—

So far as mankind has acquired the conviction that the observance of certain rules of conduct is essential to the maintenance of social existence, it may be proper to say that "Providence," operating through men, has generated morality. Within the limits of a fraction of a fraction of the living world, therefore, there is a "moral" providence. Through this small plot of an infinitesimal fragment of the universe there runs a "stream of tendency towards righteousness." But outside the very rudimentary germ of a garden of Eden, thus watered, I am unable to discover any "moral" purpose, or anything but a stream of purpose towards the consummation of the cosmic process, chiefly by means of the struggle for existence, which is no more righteous or unrighteous than the operation of any other mechanism.

This, of course, is the underlying principle of the Romanes Lecture, upon which he was still at work. It is more specifically expressed in the succeeding paragraph :—

I hear much of the "ethics of evolution." I apprehend that, in the broadest sense of the term "evolution," there neither is, nor can be, any such thing. The notion that the doctrine of evolution can furnish a foundation for morals seems to me to be an illusion which has arisen from the unfortunate ambiguity of the term "fittest" in the formula, "survival of the fittest." We commonly use "fittest" in a good sense, with an understood connotation of "best"; and "best" we are apt to take in its ethical sense. But the "fittest" which survives in the struggle for existence may be, and often is, the ethically worst.

Another paragraph explains the sense in which he used to say that the Romanes Lecture was a very orthodox discourse on the text, "Satan, the Prince of this world" :—

It is the secret of the superiority of the best theological teachers to the majority of their opponents that they substantially recognise these realities of things, however strange the forms in which they clothe their conceptions. The doctrines of predestination, of original sin, of the innate depravity of man and the evil fate of the greater part of the race, of the primacy of Satan in this world, of the essential vileness of matter, of a malevolent Demiurgus subordinate to a benevolent Almighty, who has only lately revealed himself, faulty as they are, appear to me to be vastly nearer the truth than the "liberal" popular illusions that babies are all born good, and

that the example of a corrupt society is responsible for their failure to remain so; that it is given to everybody to reach the ethical ideal if he will only try; that all partial evil is universal good, and other optimistic figments, such as that which represents "Providence" under the guise of a paternal philanthropist, and bids us believe that everything will come right (according to our notions) at last.

As to "Immortality" again [he refers his critic to his book on "Hume"]. I do not think I need return to "subjective" immortality, but it may be well to add that I am a very strong believer in the punishment of certain kinds of actions, not only in the present, but in all the future a man can have, be it long or short. Therefore in hell, for I suppose that all men with a clear sense of right and wrong (and I am not sure that any others deserve such punishment) have now and then "descended into hell" and stopped there quite long enough to know what infinite punishment means. And if a genuine, not merely subjective, immortality awaits us, I conceive that, without some such change as that depicted in the fifteenth chapter of the first Epistle to the Corinthians, immortality must be eternal misery. The fate of Swift's Struldbrugs seems to me not more horrible than that of a mind imprisoned for ever within the *flammantia mœnia* of inextinguishable memories.

Further, it may be well to remember that the highest level of moral aspiration recorded in history was reached by a few ancient Jews—Micah, Isaiah, and the rest—who took no count whatever of what might or might not happen to them after death. It is not obvious to me why the same point should not by and by be reached by the Gentiles.

He admits that the generality of mankind will not be satisfied to be told that there are some topics about which we know nothing now, and do not seem likely ever to be able to know more; and, consequently, that in the long-run the world will turn to those who profess to have conclusions:—

And that is the pity of it. As in the past, so, I fear, through a very long future, the multitude will continue to turn to those who are ready to feed it with the viands its soul lusteth after; who will offer mental peace where there is no peace, and lap it in the luxury of pleasant delusions.

To missionaries of the Neo-Positivist, as to those of other professed solutions of insoluble mysteries, whose souls are bound up in the success of their sectarian propaganda, no doubt, it must be very disheartening if the "world," for whose assent and approbation they sue, stops its ears and turns its back upon them. But what does it signify to any one who does not happen to be a missionary of any

sect, philosophical or religious, and who, if he were, would have no sermon to preach except from the text with which Descartes, to go no further back, furnished us two centuries since? I am very sorry if people will not listen to those who rehearse before them the best lessons they have been able to learn, but that is their business, not mine. Belief in majorities is not rooted in my breast, and if all the world were against me the fact might warn me to revise and criticise my opinions, but would not in itself supply a ghost of a reason for forsaking them. For myself I say deliberately, it is better to have a millstone tied round the neck and be thrown into the sea than to share the enterprises of those to whom the world has turned, and will turn, because they minister to its weaknesses and cover up the awful realities which it shudders to look at.

A letter to Mr. W. P. Clayton also discusses the basis of morality.

HODESLEA, EASTBOURNE, *Nov.* 5, 1892.

DEAR SIR—I well remember the interview to which you refer, and I should have replied to your letter sooner, but during the last few weeks I have been very busy.

Moral duty consists in the observance of those rules of conduct which contribute to the welfare of society, and by implication, of the individuals who compose it.

The end of society is peace and mutual protection, so that the individual may reach the fullest and highest life attainable by man. The rules of conduct by which this end is to be attained are discoverable—like the other so-called laws of Nature—by observation and experiment, and only in that way.

Some thousands of years of such experience have led to the generalisations, that stealing and murder, for example, are inconsistent with the ends of society. There is no more doubt that they are so than that unsupported stones tend to fall. The man who steals or murders, breaks his implied contract with society, and forfeits all protection. He becomes an outlaw, to be dealt with as any other feral creature. Criminal law indicates the ways which have proved most convenient for dealing with him.

All this would be true if men had no "moral sense" at all, just as there are rules of perspective which must be strictly observed by a draughtsman, and are quite independent of his having any artistic sense.

The moral sense is a very complex affair—dependent in part upon associations of pleasure and pain, approbation and disapprobation formed by education in early youth, but in part also on an innate sense of moral beauty and ugliness (how originated need not be discussed), which is possessed by some people in great strength, while some are totally devoid of it—just as some children draw, or

are enchanted by music while mere infants, while others do not know "Cherry Ripe" from "Rule Britannia," nor can represent the form of the simplest thing to the end of their lives.

Now for this last sort of people there is no reason why they should discharge any moral duty, except from fear of punishment in all its grades, from mere disapprobation to hanging, and the duty of society is to see that they live under wholesome fear of such punishment short, sharp, and decisive.

For the people with a keen innate sense of moral beauty there is no need of any other motive. What they want is knowledge of the things they may do and must leave undone, if the welfare of society is to be attained. Good people so often forget this that some of them occasionally require hanging almost as much as the bad.

If you ask why the moral inner sense is to be (under due limitations) obeyed; why the few who are steered by it move the mass in whom it is weak? I can only reply by putting another question—Why do the few in whom the sense of beauty is strong—Shakespere, Raffaele, Beethoven, carry the less endowed multitude away? But they do, and always will. People who overlook that fact attend neither to history nor to what goes on about them.

Benjamin Franklin was a shrewd, excellent, kindly man. I have a great respect for him. The force of genial common-sense respectability could no further go. George Fox was the very antipodes of all this, and yet one understands how he came to move the world of his day, and Franklin did not.

As to whether we can all fulfil the moral law, I should say hardly any of us. Some of us are utterly incapable of fulfilling its plainest dictates. As there are men born physically cripples and intellectually idiots, so there are some who are moral cripples and idiots, and can be kept straight not even by punishment. For these people there is nothing but shutting up, or extirpation.—I am, yours faithfully, T. H. HUXLEY.

The peaceful aspect of this article seems to have veiled to most readers the unbroken nature of his defence, and he writes to his son-in-law, the Hon. John Collier, suggesting an alteration in the title of the essay:—

HODESLEA, EASTBOURNE,
Nov. 8, 1892.

MY DEAR JACK—It is delightful to find a reader who "twigs" every point as acutely as your brother has done. I told somebody —was it you?—I rather wished the printer would substitute *o* for *e* in Irenicon. So far as I have seen any notices, the British critic

(what a dull ass he is) appears to have been seriously struck by my sweetness of temper.

I sent you the article yesterday, so you will judge for yourself.—With love, ever yours affectionately, T. H. HUXLEY.

You should see the place I am claiming for Art in the University. I do believe something will grow out of my plan, which has made all the dry bones rattle. It is coming on for discussion in the Senate, and I shall be coming to you to have my wounds dressed after the fight. Don't know the day yet.

This allusion to the place of Art in the University refers to the proposed reorganisation of the London University.

Since the year 1887 the question of establishing a Teaching University for London had become more and more pressing. London contained many isolated teaching bodies of various kinds—University College, King's College, the Royal College of Science, the Medical Schools, Bedford College, and so forth, while the London University was only an examining body. Clearly these scattered bodies needed organising; the educational forces of the metropolis were disintegrated; much teaching—and this was especially true of the medical schools—that could have been better done and better paid in a single institution, was split up among several, none of which, perhaps, could offer sufficient inducement to keep the best men permanently.

The most burning question was, whether these bodies should be united into a new university, with power to grant degrees of its own, or should combine with the existing University of London, so that the latter would become a teaching as well as an examining body. And if so, there was the additional question as to the form which this combination should take — whether federation, for example, or absorption.

The whole question had been referred to a Royal Commission by the Government of Lord Salisbury. The results were seen in the charter for a Gresham University, embodying the former alternative, and in the introduction into Parliament of a Bill to carry this scheme into effect. But this action had only been promoted by some of the bodies interested, and was strongly opposed by other bodies, as well

as by many teachers who were interested in university reform.

Thus at the end of February, Huxley was invited, as a Governor of University College, to sign a protest against the provisions of the Charter for a Teaching University then before Parliament, especially in so far as it was proposed to establish a second examining body in London. The signatories also begged the Government to grant further enquiry before legislating on the subject.

The protest, which received over 100 signatures of weight, contributed something towards the rejection of the Bill in the House of Commons. It became possible to hope that there might be established in London a University which should be something more than a mere collection of teachers, having as their only bond of union the preparation of students for a common examination. It was proposed to form an association to assist in the promotion of a teaching university for the metropolis; but the first draft of a scheme to reconcile the complication of interests and ideals involved led Huxley to express himself as follows:—

HODESLEA, EASTBOURNE,
March 27, 1892.

DEAR PROFESSOR WELDON[1]—I am sorry to have kept you waiting so long for an answer to your letter of the 17th: but your proposal required a good deal of consideration, and I have had a variety of distractions.

So long as I am a member of the Senate of the University of London, I do not think I can with propriety join any Association which proposes to meddle with it. Moreover, though I have a good deal of sympathy with the ends of the Association, I have my doubts about many propositions set forth in your draft.

I took part in the discussions preliminary to Lord Justice Fry's scheme, and I was so convinced that that scheme would be wrecked amidst the complication of interests and ideals that claimed consideration, that I gave up attending to it. In fact, living so much out of the world now, and being sadly deaf, I am really unfit to intervene in business of this kind.

Worse still, I am conscious that my own ideal is, for the present at any rate, hopelessly impracticable. I should cut away medicine,

[1] Then at University College, London; now Linacre Professor of Physiology at Oxford.

law, and theology as technical specialities in charge of corporations which might be left to settle (in the case of medicine, in accordance with the State) the terms on which they grant degrees.

The university or universities should be learning and teaching bodies devoted to art (literary and other), history, philosophy, and science, where any one who wanted to learn all that is known about these matters should find people who could teach him and put him in the way of learning for himself.

That is what the world will want one day or other, as a supplement to all manner of high schools and technical institutions in which young people get decently educated and learn to earn their bread—such as our present universities.

It will be a place for men to get knowledge; and not for boys and adolescents to get degrees.

I wish I could get the younger men like yourself to see that this is the goal which they may reach, and in the meanwhile to take care that no such Philistine compromise as is possible at present, becomes too strong to survive a sharp shake.—I am, yours very faithfully, T. H. HUXLEY.

He sketches his ideal of a modern university, and especially of its relation to the Medical Schools, in a letter to Professor Ray Lankester of April 11—

HODESLEA, EASTBOURNE,
April 11, 1892.

MY DEAR LANKESTER—We have been having ten days of sunshine, and I have been correspondingly lazy, especially about letter-writing. This, however, is my notion; that unless people clearly understand that the university of the future is to be a very different thing from the university of the past, they had better put off meddling for another generation.

The mediæval university looked backwards: it professed to be a storehouse of old knowledge, and except in the way of dialectic cobweb-spinning, its professors had nothing to do with novelties. Of the historical and physical (natural) sciences, of criticism and laboratory practice, it knew nothing. Oral teaching was of supreme importance on account of the cost and rarity of manuscripts.

The modern university looks forward, and is a factory of new knowledge: its professors have to be at the top of the wave of progress. Research and criticism must be the breath of their nostrils; laboratory work the main business of the scientific student; books his main helpers.

The lecture, however, in the hands of an able man will still have the utmost importance in stimulating and giving facts and principles their proper relative prominence.

I think we should get pretty nearly what is wanted by grafting a Collège de France on to the University of London, subsidising University College and King's College (if it will get rid of its tests, not otherwise), and setting up two or three more such bodies in other parts of London. (Scotland, with a smaller population than London, has four complete universities!)

I should hand over the whole business of medical education and graduation to a medical universitas to be constituted by the royal colleges and medical schools, whose doings, of course, would be checked by the Medical Council.

Our side has been too apt to look upon medical schools as feeders for Science. They have been so, but to their detriment as medical schools. And now that so many opportunities for purely scientific training are afforded, there is no reason they should remain so.

The problem of the Medical University is to make an average man into a good practical doctor before he is twenty-two, and with not more expense than can be afforded by the class from which doctors are recruited, or than will be rewarded by the prospect of an income of £400 to £500 a year.

It is not right to sacrifice such men, and the public on whom they practise, for the prospect of making 1 per cent of medical students into men of science.—Ever yours very faithfully,

T. H. HUXLEY.

An undated draft in his own handwriting (probably the draft of a speech delivered the first time he came to the committee as President, October 26) expands the same idea as to the modern requirements of the University:—

The cardinal fact in the University question appears to me to be this: that the student to whose wants the mediæval University was adjusted, looked to the past and sought book-learning, while the modern looks to the future and seeks the knowledge of things.

The mediæval view was that all knowledge worth having was explicitly or implicitly contained in various ancient writings; in the Scriptures, in the writings of the greater Greeks, and those of the Christian Fathers. Whatever apparent novelty they put forward, was professedly obtained by deduction from ancient data.

The modern knows that the only source of real knowledge lies in the application of scientific methods of inquiry to the ascertainment of the facts of existence; that the ascertainable is infinitely greater than the ascertained, and that the chief business of the teacher is not so much to make scholars as to train pioneers.

From this point of view, the University occupies a position altogether independent of that of the coping-stone of schools for

general education, combined with technical schools of Theology, Law, and Medicine. It is not primarily an institution for testing the work of schoolmasters, or for ascertaining the fitness of young men to be curates, lawyers, or doctors.

It is an institution in which a man who claims to devote himself to Science or Art, should be able to find some one who can teach him what is already known, and train him in the methods of knowing more.

I include under Art,—Literature, the pictorial and plastic art with Architecture, and Music; and under Science,—Logic, Philosophy, Philology, Mathematics, and the Physical Sciences.

The question of the connection of the High Schools for general education, and of the technical schools of Theology, Law, Medicine, Engineering, Art, Music, and so on, with the University is a matter of practical detail. Probably the teaching of the subjects which stand in the relation of preliminaries to technical teaching and final studies in higher general education in the University would be utilised by the colleges and technical schools.

All that I have to say on this subject is, that I see no reason why the existing University of London should not be completed in the sense I have defined by grafting upon it a professoriate with the appropriate means and appliances, which would supply London with the analogue of the École des hautes Études and the Collège de France in Paris, and of the Laboratories with the Professor Extraordinarius and Privat Docenten in the German Universities.

A new Commission was promised to look into the whole question of the London University. This is referred to in a letter to Sir J. Donnelly of March 30, 1892 :—

Unless you want to kill Foster, don't suggest him for the Commission. He is on one already.

The whole affair is a perfect muddle of competing crude projects and vested interests, and is likely to end in a worse muddle, as anything but a patch up is, I believe, outside practical politics at present.

If I had *carte blanche*, I should cut away the technical "Faculties" of Medicine, Law, and Theology, and set up first-class chairs in Literature, Art, Philosophy, and pure Science—a sort of combination of Sorbonne (without Theology) and Collège de France.

Thank Heaven I have never been asked to say anything, and my chimæras remain *in petto*. They would be scouted.

On the other hand, he was most anxious to keep the School of Science at South Kensington entirely independent. He writes again on May 26 :—

I trust Rücker and Thorpe are convinced by this time that I knew what I was talking about when I told them, months ago, that there would be an effort to hook us into the new University hotch-potch.

I am ready to oppose any such project tooth and nail. I have not been striving these thirty years to get Science clear of their schoolmastering sham-literary peddling to give up the game without a fight. I hope my Lords will be staunch.

I am glad my opinion is already on record.

And similarly to Sir M. Foster on October 30:—

You will have to come to London and set up physiology at the Royal College of Science. It is the only place in Great Britain in which scientific teaching is trammelled neither by parsons nor by litterateurs. I have always implored Donnelly to keep us clear of any connection with a University of any kind, sort, or description, and I tried to instil the same lesson into the doctors the other day. But the "liberal education" cant is an obsession of too many of them.

A further step was taken in June, when he was sent a new draft of proposals, afterwards adopted by the above-mentioned general meeting of the Association in March 1893, sketching a constitution for a new university, and asking for the appointment of a Statutory Commission to carry it out. The University thus constituted was to be governed by a Court, half of which should consist of university professors[1]; it was to include such faculties as Law, Engineering, Medicine, while it was to bring into connection the various teaching bodies scattered over London.

[1] "As for a government by professors only" (he writes in the *Times* of Dec. 6, 1892), "the fact of their being specialists is against them. Most of them are broad-minded, practical men; some are good administrators. But, unfortunately, there is among them, as in other professions, a fair sprinkling of one-idea'd fanatics, ignorant of the commonest conventions of official relation, and content with nothing if they cannot get everything their own way. It is these persons who, with the very highest and purest intentions, would ruin any administrative body unless they were counterpoised by non-professional, common-sense members of recognised weight and authority in the conduct of affairs." Furthermore, against the adoption of a German university system, he continues, "In holding up the University of Berlin as our model, I think you fail to attach sufficient weight to the considerations that there is no Minister of Public Instruction in these realms; that a great many of us would rather have no university at all than one under the control of such a minister, and whose highest representatives might come to be, not the fittest men, but those who stood foremost in the good graces of the powers that be, whether Demos, Ministry, or Sovereign."

The proposers themselves recognised that the scheme was not ideal, but a compromise which at least would not hamper further progress, and would supersede the Gresham scheme, which they regarded as a barrier to all future academic reform.

The Association as thus constituted Huxley now joined, and was immediately asked to accept the Presidency, not that he should do any more militant work than he was disposed to attempt, but simply that he should sit like Moltke in his tent and keep an eye on the campaign.

He felt it almost a point of honour not to refuse his best services to a cause he had always had at heart, though he wrote :—

> There are some points in which I go further than your proposals, but they are so much, to my mind, in the right direction that I gladly support them.

And again :—

> The Association scheme is undoubtedly a compromise—but it is a compromise which takes us the right way, while the former schemes led nowhere except to chaos.

He writes to Sir W. H. Flower :—

> HODESLEA, EASTBOURNE,
> *June* 27, 1892.
>
> MY DEAR FLOWER—I had quite given up the hope that anything but some wretched compromise would come of the University Commission, when I found, to my surprise, no less than gratification, that a strong party among the younger men were vigorously taking the matter up in the right (that is, *my*) sense.
>
> In spite of all my good resolves to be a "hermit old in mossy cell," I have enlisted—for ambulance service if nothing better.
>
> The move is too important to spare oneself if one can be of any good.—Ever yours very faithfully, T. H. HUXLEY.

Of his work in this position Professor Karl Pearson says, in a letter to me :—

> Professor Huxley gallantly came to lead a somewhat forlorn hope,—that of establishing a really great university in London. He worked, as may naturally be supposed, with energy and persistence,

and one, who like myself was not in full sympathy with the lines he took, can but admire the vigour he threw into the movement. Nothing came of it practically; . . . but Professor Huxley's leadership did, at any rate, a great deal to unite the London teachers, and raise their ideal of a true university, while at the same time helping to repress the self-interests of many persons and institutions which had been before very much to the front.

Clearly this is the sort of thing referred to in a letter of December 20 :—

Got through the Association business very well, but had to show that I am the kind of head that does not lend itself to wagging by the tail.

The Senate of the University of London showed practical unanimity in accepting the idea of taking on teaching functions if the Commission should think it desirable, though the Medical Schools were still desirous of getting their degree granted on the mere license examination of the Royal Colleges, without any evidence of general culture or academical training, and on July 28 Huxley writes :—

The decision of the representatives of the Medical Schools is just such as I should have expected. I always told my colleagues in the Senate of the University of London that such was their view, and that, in the words of Pears' advertisement, they "would not be happy till they got it."

And they won't get it unless the medical examining bodies are connected into a distinct degree-giving body.

In the course of the autumn matters seemed to be progressing. He writes to Sir M. Foster, November 9 :—

I am delighted to say that Paget has taken up the game, and I am going to a committee of the University this day week to try my powers of persuasion. If the Senate can only be got to see where salvation lies and strike hard without any fooling over details, we shall do a great stroke of business for the future generations of Londoners.

And by the end of the year he writes :—

I think we are going to get something done, as the Senate of the U.L. has come into line with us, and I hope University College will do the same.

Meanwhile he was asked if he would appear before the Commission and give evidence—to "talk without interrogation" so as to convince the Commission of the inadequacy of the teaching of science in general and of the absence of means and appliances for the higher teaching. This he did early in January 1893, representing partly his own views, partly those of the Association, to whom he read what he proposed to say, before being authorised to speak on their behalf.

His position is finally defined by the following letter:—

Feb. 9, 1893.

DEAR PROFESSOR WELDON—I wish anything I have said or shall say about the organisation of the new University to be taken in connection with the following postulates which I conceive to be of primary importance:

1. The New University is not to be a separate body from the present University of London.

2. All persons giving academic instruction of a certain rank are to be "University Professors."

3. The Senate is to contain a large proportion of representatives of the "University Professors" with a limited term of office (say five years).

4. The University chest is to receive all fees and other funds for University purposes; and the Professors are to be paid out of it, according to work done for the University—thus putting an end to the present commercial competition of teaching institutions.

5. In all questions of Teaching, Examination, and Discipline the authority of the Senate is to be supreme—(saving appeal to the Privy Council).

Your questions will be readily answered if these postulates are kept in view.

In the case you put, the temptation to rivalry would not exist; and I should imagine that the Senate would refuse funds for the purpose of duplicating an existing Institution, unless very strong grounds for so doing could be shown. In short, they would adopt the plan which commends itself to you.

That to which I am utterly opposed is the creation of an Established Church Scientific, with a hierarchical organisation and a professorial Episcopate. I am fully agreed with you that all trading competition between different teaching institutions is a thing to be abolished (see No. 4 above).

On the other hand, intellectual competition is a very good

thing, and perfect freedom of learning and teaching the best of all things.

If you put a physical, chemical, or biological bishop at the head of the teachers of those sciences in London, you will do your best to destroy that freedom. My bar to any catastrophe of that sort lies in No. 3. Let us take the case of Biology. I suppose there will be, at least, half a dozen Professoriates in different branches of this subject; each Professor will be giving the same amount of time and energy to University work, and will deserve the same pay. Each, if he is worth his salt, will be a man holding his own views on general questions, and having as good a right as any other to be heard. Why is one to be given a higher rank and vastly greater practical influence than all the rest? Why should not each be a "University Professor" and have his turn on the Senate in influencing the general policy of the University? The nature of things drives men more and more into the position of specialists. Why should one specialist represent a whole branch of science better than another, in Council or in Administration?

I am afraid we cannot build upon the analogy of Cambridge. In the first place London is not Cambridge; and, in the second, Michael Fosters do not grow on every bush.

The besetting sin of able men is impatience of contradiction and of criticism. Even those who do their best to resist the temptation, yield to it almost unconsciously and become the tools of toadies and flatterers. "Authorities," "disciples," and "schools" are the curse of science; and do more to interfere with the work of the scientific spirit than all its enemies.

Thus you will understand why I have so strongly opposed "absorption." No one can feel more strongly than I the need of getting the present chaos into order and putting an end to the absurd waste of money and energy. But I believe that end may be attained by the method of unification which I have suggested; without bringing in its train the evils which will inevitably flow from "absorptive" regimentation.

What I want to see is such an organisation of the means and appliances of University instruction in all its branches, as will conduce to the largest possible freedom of research, learning, and teaching. And if anybody will show me a better way to that end than through the measures I have suggested, I will gladly leave all and follow him.—I am yours very faithfully, T. H. HUXLEY.

P.S.—Will you be so kind as to let Professor Lankester see this letter, as I am writing to him and shirk the labour of going over the whole ground again.

His last public activity, indeed, was on behalf of University reform, when in January 1895 he represented not

only the Association, but, in the enforced absence of Sir James Paget, the Senate of the University also, on a deputation to Lord Rosebery, then Prime Minister, to whom he wrote asking if he were willing to receive such a deputation.

HODESLEA, EASTBOURNE,
Dec. 4, 1894.

DEAR LORD ROSEBERY—A number of scientific people, in fact I think I may say all the leading men of science, and especially teachers in the country, are very anxious to see the University of London reorganised upon the general principles set forth in the Report of the last Royal Commission.

To this end nothing is wanted but the institution of a strong Statutory Commission; and we have all been hoping that a Bill would be introduced for that purpose.

It is rumoured that there are lions in the path. But even lions are occasionally induced to retreat by the sight of a large body of beaters. And some of us think that such a deputation as would willingly wait on you, might hasten the desired movement.

We proposed something of the kind to Mr. Acland months ago, but nothing has come of the suggestion—not, I am sure, from any want of good will to our cause on his part.

Within the last few days I have been so strongly urged to bring the matter before you, that in spite of some doubts as to the propriety of going beyond my immediate chief the V.P. even in my private capacity I venture to make this appeal.—I am, dear Lord Rosebery, faithfully yours, THOS. H. HUXLEY.

CHAPTER XIX

1892

SEVERAL letters of this year touch on educational subjects. The following advice as to the best training for a boy in science, was addressed to Mr. Briton Riviere, R.A. :—

HODESLEA, *June* 19, 1892.

MY DEAR RIVIERE—Touching the training of your boy who wants to go in for science, I expect you will have to make a compromise between that which is theoretically desirable and that which is practically most advantageous, things being as they are.

Though I say it that shouldn't, I don't believe there is so good a training in physical science to be got anywhere as in our College at South Kensington. But Bernard could hardly with advantage take this up until he is seventeen at least. What he would profit by most as a preliminary, is training in the habit of expressing himself well and clearly in English; training in mathematics and the elements of physical science; in French and German, so as to read those languages easily—especially German; in drawing—not for hifalutin art, of which he will probably have enough in the blood—but accurate dry reproduction of form—one of the best disciplines of the powers of observation extant.

On the other hand, in the way of practical advantage in any career, there is a great deal to be said for sending a clever boy to Oxford or Cambridge. There are not only the exhibitions and scholarships, but there is the rubbing shoulders with the coming generation which puts a man in touch with his contemporaries as hardly anything else can do. A very good scientific education is to be had at both Cambridge and Oxford, especially Cambridge now.

In the case of sending to the university, putting through the Latin and Greek mill will be indispensable. And if he is not going to make the classics a serious study, there will be a serious waste of time and energy.

So much in all these matters depends on the x contained in the boy himself. If he has the physical and mental energy to make a mark in science, I should drive him straight at science, taking care that he got a literary training through English, French, and German. An average capacity, on the other hand, may be immensely helped by university means of flotation.

But who in the world is to say how the x will turn out, before the real strain begins? One might as well prophesy the effect of a glass of "hot-with" when the relative quantities of brandy, water, and sugar are unknown. I am sure the large quantity of brandy and the very small quantity of sugar in my composition were suspected neither by myself, nor any one else, until the rows into which wicked men persisted in involving me began!

And that reminds me that I forgot to tell the publishers to send you a copy of my last peace-offering, and that one will be sent you by to-morrow's post. There is nothing new except the prologue, the sweet reasonableness of which will, I hope, meet your approbation.

It is not my fault if you have had to toil through this frightfully long screed; Mrs. Riviere, to whom our love, said you wanted it. "Tu l'as voulu, Georges Dandin."—Ever yours very faithfully,

T. H. HUXLEY.

The following deals with State intervention in intermediate education:—

(For Sunday morning's leisure, or take it to church and read it in your hat.)

HODESLEA, EASTBOURNE,
Oct. 1, 1892.

MY DEAR DONNELLY—Best thanks for sending on my letter. I do not suppose it will do much good, but, at any rate, I thought I ought to try to prevent their making a mess of medical education.

I like what I have seen of Acland. He seemed to have both intelligence and volition.

As to intermediate education I have never favoured the notion of State intervention in this direction.

I think there are only two valid grounds for State meddling with education: the one the danger to the community which arises from dense ignorance; the other, the advantage to the community of giving capable men the chance of utilising their capacity.

The first furnishes the justification for compulsory elementary education. If a child is taught reading, writing, drawing, and handiwork of some kind; the elements of mathematics, physics, and history, and I should add of political economy and geography;

books will furnish him with everything he can possibly need to make him a competent citizen in any rank of life.

If with such a start, he has not the capacity to get all he needs out of books, let him stop where he is. Blow him up with intermediate education as much as you like, you will only do the fellow a mischief and lift him into a place for which he has no real qualification. People never will recollect, that mere learning and mere cleverness are of next to no value in life, while energy and intellectual grip, the things that are inborn and cannot be taught, are everything.

The technical education act goes a long way to meet the second claim of the State; so far as scientific and industrial capacities are concerned. In a few years there will be no reason why any potential Whitworth or Faraday, in the three kingdoms, should not readily obtain the best education that is to be had, scientific or technical. The same will hold good for Art. So the question that arises seems to me to be whether the State ought or ought not to do something of the same kind for Literature, Philosophy, History, and Philology.

I am inclined to think not, on the ground that the universities and public schools ought to do this very work, and that as soon as they cease to be clericalised seminaries they probably will do it.

If the present government would only give up their Irish fad—and bring in a bill to make it penal for any parson to hold any office in a public school or university or to presume to teach outside the pulpit—they should have my valuable support!

I should not wonder if Gladstone's mind is open on the subject. Pity I am not sufficiently a *persona grata* with him to offer to go to Hawarden and discuss it.

I quite agree with you, therefore, that it will play the deuce if intermediate education is fossilised as it would be by any Act prepared under present influences. The most I should like to see done, would be to help the youth of special literary, linguistic and so forth, capacity, to get the best training in their special line.

It was lucky we did not go to you. My wife got an awful dose of neuralgia and general upset, and was laid up at the Hotel. The house was not quite finished inside, but we came in on Tuesday, and she has been getting better ever since in spite of the gale.

I am sorry to hear of the recurrence of influenza. It is a beastly thing. Lord Justice Bowen told me he has had it every time it has been in the country. You must come and try Eastbourne air as soon as we are settled. With our love to you and Mrs. Donnelly—Ever yours, T. H. HUXLEY.

Better be careful, I return all letters on which R.H. is not in full.

The next is to a young man with aspirations after an intellectual career, who asked his advice as to the propriety of throwing up his business, and plunging into literature or science :—

HODESLEA, EASTBOURNE,
Nov. 5, 1892.

DEAR SIR—I am very sorry that the pressure of other occupations has prevented me from sending an earlier reply to your letter.

In my opinion a man's first duty is to find a way of supporting himself, thereby relieving other people of the necessity of supporting him. Moreover, the learning to do work of practical value in the world, in an exact and careful manner, is of itself a very important education, the effects of which make themselves felt in all other pursuits. The habit of doing that which you do not care about when you would much rather be doing something else, is invaluable. It would have saved me a frightful waste of time if I had ever had it drilled into me in youth.

Success in any scientific career requires an unusual equipment of capacity, industry, and energy. If you possess that equipment you will find leisure enough after your daily commercial work is over, to make an opening in the scientific ranks for yourself. If you do not, you had better stick to commerce. Nothing is less to be desired than the fate of a young man, who, as the Scotch proverb says, in 'trying to make a spoon spoils a horn,' and becomes a mere hanger-on in literature or in science, when he might have been a useful and a valuable member of Society in other occupations.

I think that your father ought to see this letter.—Yours faithfully,

T. H. HUXLEY.

The last of the series, addressed to the secretary of a free-thought association, expresses his firmly rooted disgust at the use of mere ribaldry in attacking the theological forms which enclose a religious ideal.

May 22, 1892.

DEAR SIR—I regret that I am unable to comply with the wish of your committee. For one thing, I am engaged in work which I do not care to interrupt, and for another, I always make it a rule in these matters to "fight for my own hand." I do not desire that anyone should share my responsibility for what I think fit to say, and I do not wish to be responsible for the opinions and modes of expression of other persons.

I do not say this with any reference to Mr. ——, who is a sober and careful writer. But both as a matter of principle and one of

policy, I strongly demur to a great deal of what appears as "free thought" literature, and I object to be in any way connected with it. Heterodox ribaldry disgusts me, I confess, rather more than orthodox fanaticism. It is at once so easy; so stupid; such a complete anachronism in England, and so thoroughly calculated to disgust and repel the very thoughtful and serious people whom it ought to be the great aim to attract. Old Noll knew what he was about when he said that it was of no use to try to fight the gentlemen of England with tapsters and serving-men. It is quite as hopeless to fight Christianity with scurrility. We want a regiment of Ironsides.

This summer brought Huxley a most unexpected distinction in the shape of admission to the Privy Council. Mention has already been made (Vol. I. p. 359) of his reasons for refusing to accept a title for distinction in science, apart from departmental administration. The proper recognition of science, he maintained, lay in the professional recognition of a man's work by his peers in science, the members of the learned societies of his own and other countries.

But, as has been said, the Privy Councillorship was an office, not a title, although with a title attaching to the office; and in theory, at least, a scientific Privy Councillor might some day play an important part as an accredited representative of science, to be consulted officially by the Government, should occasion arise.

Of a selection of letters on the subject, mostly answers to congratulations, I place first the one to Sir M. Foster which gives the fullest account of the affair.

CON-Y-GEDAL HOTEL, BARMOUTH,
Aug. 23, 1892.

MY DEAR FOSTER—I am very glad you think I have done right about the P.C.; but in fact I could hardly help myself.

Years and years ago I was talking to Donnelly about these things, and told him that so far as myself was concerned, I would have nothing to do with official decorations—didn't object to other people having them, especially heads of offices, like Hooker and Flower—but preferred to keep clear myself. But I added that there was one thing I did not mind telling him, because no English Government would ever act upon my opinion—and that was that the P.C. was a fit and proper recognition for science and letters. I have no doubt that he has kept this in mind ever since—in fact Lord Salisbury's letter (which was very handsome) showed he had

been told of my *obiter dictum*. Donnelly was the first channel of inquiry whether I would accept, and was very strong that I should.

So you see if I had wished to refuse it, it would have been difficult and ungracious. But, on the whole, I thought the precedent good. Playfair tells me he tried to get it done in the case of Faraday and Babbage thirty years ago, and the thing broke down. Moreover a wicked sense of the comedy of advancing such a pernicious heretic, helped a good deal.

The worst of it is, I have just had a summons to go to Osborne on Thursday and it is as much as I shall be able to do.

We have been in South Wales, in the neighbourhood of the Colliers, and are on our way to the Wallers for the Festival week at Gloucester. We hope to get back to Eastbourne in the latter half of September and find the house clean swept and garnished. After that, by the way, it is *not* nice to say that we shall hope to have a visit from Mrs. Foster and you.

With our love to you both—Ever yours, T. H. HUXLEY.

I am glad you are resting, but oh, why another Congress!

HODESLEA, EASTBOURNE,
June 21, 1892.

MY DEAR DONNELLY—You have been and done me at last, you betrayer of confidence. This is what comes of confiding one's pet weakness to a bosom-friend!

But I can't deny my own words, or the accuracy of your devil of a memory—and, moreover, I think the precedent of great importance.

I have always been dead against orders of merit and the like, but I think that men of letters and science who have been of use to the nation (Lord knows if I have) may fairly be ranked among its nominal or actual councillors.

As for yourself it is only one more kindness on the top of a heap so big I shall say nothing about it.

Mrs. Right Honourable sends her love to you both, and promises not to be proud.—Ever yours very faithfully, T. H. HUXLEY.

CON-Y-GEDAL HOTEL, BARMOUTH,
Aug. 20, 1892.

MY DEAR DONNELLY—I began to think that Lord Salisbury had thought better of it—(I should not have been surprised at all if he had) and was going to leave me a P.P.C. instead of a P.C. when the announcement appeared yesterday.

This morning, however, I received his own letter (dated the 16th), which had been following me about. A very nice letter it is too—he does the thing handsomely while he is about it.

Well, I think the thing is good for science; I am not such a self humbug as to pretend that my vanity is not pleasantly tickled, but I do not think there is any aspect of the affair more pleasant to me, than the evidence it affords of the strength of our old friendship. Because with all respect for my noble friends, deuce a one would ever have thought of it, unless you had not only put it—but rubbed it—into their heads.

I have not forgotten that private and confidential document that you were so disgusted to find had been delivered to me! You have tried it on before—so don't deny it.

But bless my soul, how profound is old Cole's remark about the humour of public affairs. To think of a Conservative Government—pride of the Church—going out of its way to honour one not only of the wicked, but of the notoriousest and plain-spoken wickedness. My wife and I drove over to Dolgelly yesterday—do you know it? one of the loveliest things in the three kingdoms—and every now and then had a laugh over this very quaint aspect of the affair.

Can you tell me what I shall have to do in the dim and distant future? I suppose I shall have to go and swear somewhere (I am always ready to do that on occasion). Is admission to the awful presence of H.M. involved? Shall I have to rig up again in that Court suit, which I hoped was permanently laid up in lavender? Resolve me these things.

We shall be here I expect at least another week; and bring up at Gloucester about the 3rd September. Hope to get back to Hodeslea latter part of September.—Ever yours faithfully,

T. H. HUXLEY.

TO SIR J. D. HOOKER

Aug. 20.

You will have seen that I have been made a P.C. If I had been offered to be made a police constable I could not have been more flabbergasted than I was when the proposition came to me a few weeks ago. I will tell you the story of how it all came about when we meet. The Archbishopric of Canterbury is the only object of ambition that remains to me. Come and be Suffragan; there is plenty of room at Lambeth and a capital garden!

TO HIS YOUNGEST DAUGHTER

CON-Y-GEDAL HOTEL, BARMOUTH,
Aug. 22, 1892.

DEAREST BABS—If Lord Salisbury had known my address, M—— and I should have had our little joke out before leaving Saundersfoot,[1]

[1] Where he had been staying with his daughter.

as the letter was dated 16th. It must be a month since Lord Cranbrook desired Donnelly to find out if I would accept the P.C., and as I heard no more about it up to the time of dissolution, I imagined there was a hitch somewhere. And really, the more I think of it the queerer does it seem, that a Tory and Church Government should have delighted to honour the worst-famed heretic in the three kingdoms.

I am sure Donnelly has been at the bottom of it, as he is the only person to whom I ever spoke of the fitness of the P.C. for men of science and letters.

The queer thing is that his chief and Lord Salisbury listened to the suggestion.

Tell Jack he is simply snuffed out—younger sons of peers go with the herd of Barts. and knights I believe. But a table of precedence is not to be had for love or money—and my anxiety is wearing.

This place is as perfectly delightful as Aberystwith was t'other. . . . With best love to you all—Ever your PATER.

TO MRS. W. K. CLIFFORD

CON-Y-GEDAL HOTEL, BARMOUTH,
Aug. 22, 1892.

MY DEAR LUCY—I am glad to think that it is the honours that blush and not the recipient, for I am past that form of vascular congestion.

It was known that the only peerage I would accept was a spiritual one; and as H.M. shares the not unnatural prejudice which led her illustrious predecessor (now some time dead) to object to give a bishopric to Dean Swift, it was thought she could not stand the promotion of Dean Huxley; would see[1] him in fact . . .

Lord S. apologised for not pressing the matter, but pointed out that, as Evolutionism is rapidly gaining ground among the people who have votes, it was probable, if not certain, that his eminent successor (whose mind is always open) would become a hot evolutionist before the expiration of the eight months' office which Lord S. (who needs rest) means to allow him. And when eminent successor goes out, my bishopric will be among the Dissolution Honours. If H.M. objects she will be threatened with the immediate abolition of the H. of Lords, and the institution of a social democratic federation of counties, each with an army, navy, and diplomatic service of its own.

I know you like to have the latest accurate intelligence, but this really must be considered confidential. As a P.C. I might lose my head for letting out State secrets.—Ever your affectionate

[1] This is a pun. PATER.

To Sir Joseph Fayrer

Con-y-Gedal Hotel, Barmouth, Wales,
Aug. 28, 1892.

It is very pleasant to get the congratulations of an old friend like yourself. As we went to Osborne the other day I looked at the old *Victory* and remembered that six and forty years ago I went up her side to report myself on appointment, as a poor devil of an assistant surgeon. And I should not have got that far if you had not put it into my head to apply to Burnett.

To Sir Joseph Prestwich

Con-y-Gedal Hotel, Barmouth,
Aug. 31, 1892.

My dear Prestwich—Best thanks for your congratulations. As I have certainly got more than my temporal deserts, the other "half" you speak of can be nothing less than a bishopric! May you live to see that dignity conferred; and go on writing such capital papers as the last you sent me, until I write myself your Right Revd. as well as Right Honble. old friend,

T. H. Huxley.

To Sir W. H. Flower

Con-y-Gedal Hotel, Barmouth,
Aug. 31, 1892.

My dear Flower—Many thanks for your congratulations, with Lady Flower's postscript not forgotten. I should have answered your letter sooner, but I had to go to Osborne last week in a hurry, kiss hands and do my swearing. It was very funny that the Gladstone P.C.'s had the pleasure of welcoming the Salisbury P.C.'s among their first official acts!

I will gladly come to as many meetings of the Trustees as I can. Only you must not expect me in very severe weather like that so common last year. My first attack of pleurisy was dangerous and not painful; the second was painful and not dangerous; the third will probably be both painful and dangerous, and my commander-in-chief (who has a right to be heard in such matters) will not let me run the risk of it.

But I have marked down Oct. 22 and Nov. 24, and nothing short of snow shall stop me.

As to what you want to do, getting butter out of a dog's mouth is an easier job than getting patronage out of that of a lawyer or an ecclesiastic. But I am always good for a forlorn hope, and we will have a try.

We shall not be back at Eastbourne till the latter half of September, and I doubt if we shall get into our house even then. We leave this for Gloucester, where we are going to spend the festival week with my daughter to-morrow.—With our love to you both, ever yours very faithfully, T. H. HUXLEY.

I see a report that Owen is sinking. Poor old man; it seems queer that just as I am hoist to the top of my tree he should be going underground. But at 88 life cannot be worth much.

To MR. W. F. COLLIER

CON-Y-GEDAL HOTEL, BARMOUTH WATER,
Aug. 31, 1892.

Accept my wife's and my hearty thanks for your kind congratulations. When I was a mere boy I took for motto of an essay, "What is honour? Who hath it? He that died o' Wednesday," and although I have my full share of ambition and vanity, I doubt not, yet Falstaff's philosophical observation has dominated my mind and acted as a sort of perpetual refrigerator to these passions. So I have gone my own way, sought for none of these things and expected none—and it would seem that the deepest schemer's policy could not have answered better. We must have a new Beatitude, "Blessed is the man who expecteth nothing," without its ordinary appendix.

I tell Jack[1] I have worked hard for a dignity which will enable me to put down his aristocratic swaggering.

It took some time, however, to get used to the title, and it was October before he wrote:—

The feeling that "The Right Honble." on my letters is a piece of chaff is wearing off, and I hope to get used to my appendix in time.

The "very quaint" ceremony of kissing hands is described at some length in a letter to Mrs. Huxley from London on his way back from Osborne:—

[1] His son-in-law, Hon. John Collier.

GREAT WESTERN HOTEL,
Aug. 25, 1892, 6.40 P.M.

I have just got back from Osborne, and I find there are a few minutes to send you a letter—by the help of the extra halfpenny. First-rate weather there and back, a special train, carriage with postillions at the Osborne landing-place, and a grand procession of officers of the new household and P.C.'s therein. Then waiting about while the various "sticks" were delivered.

Then we were shown into the presence chamber where the Queen sat at a table. We knelt as if we were going to say our prayers, holding a testament between two, while the Clerk of the Council read an oath of which I heard not a word. We each advanced to the Queen, knelt and kissed her hand, retired backwards, and got sworn over again (Lord knows what I promised and vowed this time also). Then we shook hands with all the P.C.'s present, including Lord Lorne, and so exit backwards. It was all very curious. . . .

After that a capital lunch and back we came. Ribblesdale and several other people I knew were of the party, and I found it very pleasant talking with him and Jesse Collings, who is a very interesting man.

"Oh," he said, "how I wish my poor mother, who was a labouring woman—a great noble woman—and brought us nine all up in right ways, could have been alive." Very human and good and dignified too, I thought.

He also used to tell how he was caught out when he thought to make use of the opportunity to secure a close view of the Queen. Looking up, he found her eyes fixed upon him; Her Majesty had clearly taken the opportunity to do the same by him.

Regarding the Privy Councillorship as an exceptional honour for science, over and above any recognition of his personal services, which he thought amply met by the Civil List pension specially conferred upon him as an honour at his retirement from the public service, Huxley was no little vexed at an article in *Nature* for August 25 (vol. xlvi. p. 397), reproaching the Government for allowing him to leave the public service six years before, without recognition. Accordingly he wrote to Sir J. Donnelly on August 27:—

It is very unfair to both Liberal and Conservative Governments,

who did much more for me than I expected, and I feel that I ought to contradict the statement without loss of time.

So I have written the inclosed letter for publication in *Nature*. But as it is always a delicate business to meddle with official matters, I wish you would see if I have said anything more than I ought to say in the latter half of the letter. If so, please strike it out, and let the first half go.

I had a narrow shave to get down to Osborne and kiss hands on Thursday. What a quaint ceremony it is!

The humour of the situation was that we three hot Unionists, White Ridley, Jesse Collings, and I, were escorted by the whole Gladstonian household.

And again on August 30:—

In the interview I had with Lord Salisbury on the subject of an order of merit—ages ago [1]—I expressly gave him to understand that I considered myself out of the running—having already received more than I had any right to expect. And when he has gone out of his way to do honour to science, it is stupid of *Nature* to strike the discordant note.

His letter appeared in *Nature* of September 1 (vol. xlvi. p. 416). In it he declared that both Lord Salisbury's and Mr. Gladstone's Governments had given him substantial recognition; that Lord Iddesleigh had put the Civil List pension expressly as an honour; and finally, that he himself placed this last honour in the category of "unearned increments."

[1] See p. 164.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

CHAPTER XX

1892

THE following letters are mainly of personal interest; some merely illustrate the humorous turn he would give to his more intimate correspondence; others strike a more serious note, especially those to friends whose powers were threatened by overwork or ill-health.

With these may fitly come two other letters; one to a friend on his re-marriage, the other to his daughter, in reply to a birthday letter.

My wife and I send our warmest good wishes to your future wife and yourself. I cannot but think that those who are parted from us, if they have cognisance of what goes on in this world, must rejoice over everything that renders life better and brighter for the sojourners in it—especially of those who are dear to them. At least, that would be my feeling.

Please commend us to Miss ——, and beg her not to put us on the "Index," because we count ourselves among your oldest and warmest friends.

TO HIS DAUGHTER, MRS. ROLLER

HODESLEA, EASTBOURNE,
May 5, 1892.

It was very pleasant to get your birthday letter and the photograph, which is charming.

The love you children show us, warms our old age better than the sun.

For myself, the sting of remembering troops of follies and errors, is best alleviated by the thought that they may make me better able to help those who have to go through like experiences, and who are so dear to me that I would willingly pay an even

heavier price, to be of use. Depend upon it, that confounded "just man who needed no repentance" was a very poor sort of a father. But perhaps his daughters were "just women" of the same type; and the family circle as warm as the interior of an ice-pail.

A certain artist, who wanted to have Huxley sit to him, tried to manage the matter through his son-in-law, Hon. J. Collier, to whom the following is addressed:—

HODESLEA, EASTBOURNE,
Jan. 27, 1892.

MY DEAR JACK—Inclosed is a letter for you. Will you commit the indiscretion of sending it on to Mr. A. B. if you see no reason to the contrary?

I hope the subsequent proceedings will interest you no more.

I am sorry you have been so bothered by the critter—but in point of pertinacity he has met his match. (I have no objection to your saying that your father-in-law is a brute, if you think that will soften his disappointment.)

Here the weather has been tropical. The bananas in the new garden are nearly ripe, and the cocoanuts are coming on. But of course you expect this, for if it is unbearably sunny in London what must it be here?

All our loves to all of you.—Ever yours affectionately,

PATER.

HODESLEA, EASTBOURNE,
Feb. 1, 1892.

MY DEAR HOOKER—I hear you have influenza rampaging about the Camp;[1] and I want to point out to you that if you want a regular bad bout of it, the best thing you can do is to go home next Thursday evening, at ten o'clock at night, and plunge into the thick of the microbes, tired and chilled.

If you don't get it then, you will, at any rate, have the satisfaction of feeling that you have done your best!

I am going to the *x*, but then you see I fly straight after dinner to Collier's per cab, and there is no particular microbe army in Eton Avenue lying in wait for me.

Either let me see after the dinner, or sleep in town, and don't worry.—Yours affectionately, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
Feb. 19, 1892.

MY DEAR HOOKER—I have just received a notice that Hirst's funeral is to-morrow. But we are in the midst of the bitterest

[1] The name of Sir J. Hooker's house at Sunningdale.

easterly gale and snowfall we have had all the winter, and there is no sign of the weather mending.

Neither you nor I have any business to commit suicide for that which after all is a mere sign of the affection we have no need to prove for our dear old friend, and the chances are that half an hour cold chapel and grave-side on a day like this would finish us.

I write this not that I imagine you would think of going, but because my last note spoke so decidedly of my own intention.

But who could have anticipated this sudden reversion to Arctic conditions?—Ever yours affectionately, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
March 18, 1892.

MY DEAR DONNELLY—My wife got better and was out for a while yesterday, but she is knocked up again to-day.

It would have been very pleasant to see you both, but you must not come down till we get fixed with a new cook and maid, as I believe we are to be in a week or so. None of your hotel-going!

I mourn over the departure of the present cookie—I believe she is going for no other reason than that she is afraid the house will fall on such ungodly people as we are, and involve her in the ruins. That is the modern martyrdom—you don't roast infidels, but people who can roast go to the pious.

Lovely day to-day, nothing but east wind to remind one it is not summer.—Crocuses coming out at last.—Ever yours very faithfully,

T. H. HUXLEY.

HODESLEA, EASTBOURNE,
April 3, 1892.

MY DEAR HOOKER—As I so often tell my wife, "your confounded sense of duty will be the ruin of you." You really, club or no club, had no business to be travelling in such a bitter east wind. However, I hope the recent sunshine has set you up again.

Barring snow or any other catastrophe, I will be at "the Club" dinner on the 26th and help elect the P.R.S. I don't think I go more than once a year, and like you I find the smaller the pleasanter meetings.

I was very sorry to see Bowman's death. What a first-rate man of science he would have been if the Professorship at King's College had been £1000 a year. But it was mere starvation when he held it.

I am glad to say that my wife is much better—thank yours for her very kind sympathy. I was very down the last time I wrote to you.—Ever yours affectionately, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
March 27, 1892.

MY DEAR HOOKER—I had to run up to town on Friday and forgot your letter. The x is a puzzle—I will stick by the ship as long as you do, depend upon that. I fear we can hardly expect to see dear old Tyndall there again. As for myself, I dare not venture when snow is on the ground, as on the last two occasions. And now, I am sorry to say, there is another possible impediment in my wife's state of health.

I have had a very anxious time of it altogether lately. But sich is life!

My sagacious granddaughter Joyce (gone home now) observed to her grandmother some time ago—"I don't want to grow up." "Why don't you want to grow up?" "Because I notice that grown-up people have a great deal of trouble." Sagacious philosopheress of 7!—Ever yours affectionately, T. H. HUXLEY.

HODESLEA, *June* 27, 1892.

MY DEAR FOSTER—My wife has been writing to Mrs. Foster to arrange for your visit, which will be heartily welcome.

Now I don't want to croak. No one knows better than I, the fatal necessity for any one in your position: more than that, the duty in many cases of plunging into public functions, and all the guttle guzzle, and gammon therewith connected.

But do let me hold myself up as the horrid example of what comes of that sort of thing for men who have to work as you are doing and I have done. To be sure you are a "lungy" man and I am a "livery" man, so that your chances of escaping candle-snuff accumulations with melancholic prostration are much better. Nevertheless take care. The pitcher is a very valuable piece of crockery and I don't want to live to see it cracked by going to the well once too often.

I am in great spirits about the new University movement, and have told the rising generation that this old hulk is ready to be towed out into line of battle, if they think fit, which is more commendable to my public spirit than my prudence.—Ever yours, T. H. HUXLEY.

HODESLEA, *June* 20, 1892.

MY DEAR ROMANES—My wife and I, no less than the Hookers who have been paying us a short visit, were very much grieved to hear that such a serious trouble has befallen you.

In such cases as yours (as I am sure your doctors have told you) hygienic conditions are everything—good air and idleness, *construed*

strictly, among the chief. You should do as I have done—set up a garden and water it yourself for two hours every day, besides pottering about to see how things grow (or don't grow this weather) for a couple more.

Sundry box-trees, the majority of which have been getting browner every day since I planted them three months ago, have interested me almost as much as the general election. They typify the Empire with the G.O.M. at work at the root of it!—Ever yours very faithfully, T. H. HUXLEY.

HODESLEA, *Oct.* 18, 1892.

MY DEAR ROMANES—I throw dust and ashes on my head for having left your letter almost a week unanswered. But I went to Tennyson's funeral; and since then my whole mind has been given to finishing the reply forced upon me by Harrison's article in the *Fortnightly*, and I have let correspondence slide. I think it will entertain you when it appears in November—and perhaps interest —by the adumbration of the line I mean to take if ever that "Romanes" Lecture at Oxford comes off.

As to Madeira—I do not think you could do better. You can have as much quiet there as in Venice, for there are next to no carts or carriages. I was at an excellent hotel, the "Bona Vista," kept by an Englishman in excellent order, and delightfully situated on the heights outside Funchal. When once acclimatised and able to bear moderate fatigue, I should say nothing would be more delightful and invigorating than to take tents and make the round of the island. There is nothing I have seen anywhere which surpasses the cliff scenery of the north side, or on the way thither, the forest of heaths as big as sycamores.

There is a matter of natural history which might occupy without fatiguing you, and especially without calling for any great use of the eyes. That is the effect of Madeiran climate on English plants transported there—and the way in which the latter are beating the natives. There is a Doctor who has lots of information on the topic. You may trust anything but his physic.

[The rest of the letter gives details about scientific literature touching Madeira.]

A piece of advice to his son anent building a house:—

Sept. 22, 1892.

Lastly and biggestly, don't promise anything, agree to anything, nor sign anything (swear you are an "illiterate voter" rather than this last) without advice—or you may find yourself in a legal quagmire. Builders, as a rule, are on a level with horsedealers in point

of honesty—I could tell you some pretty stories from my small experience of them.

The next, to Lord Farrer, is *apropos* of quite an extensive correspondence in the *Times* as to the correct reading of the well-known lines about the missionary and the cassowary, to which both Huxley and Lord Farrer had contributed their own reminiscences.

HODESLEA, *Oct.* 15, 1892.

MY DEAR FARRER—

If *you* were a missionary
In the heat of Timbuctoo
You'd wear nought but a nice and airy
Pair of bands—p'raps cassock too.

Don't you see the fine touch of local colour in my version! Is it not obvious to everybody who understands the methods of high *a priori* criticism that this consideration entirely outweighs the merely empirical fact that your version dates back to 1837—which I must admit is before my adolescence? It is obvious to the meanest capacity that mine must be the original text in "Idee," whatever your wretched "Wirklichkeit" may have to say to the matter.

And where, I should like to know, is a glimmer of a scintilla of a hint that the missionary was a dissenter? I claim him for my dear National Church.—Ever yours, T. H. HUXLEY.

The following is about a document which he had forgotten that he wrote:—

HODESLEA, EASTBOURNE,
Nov. 24, 1892.

MY DEAR DONNELLY—It is obvious that you have somebody in the Department who is an adept in the imitation of handwriting.

As there is no way of proving a negative, and I am too loyal to raise a scandal, I will just father the scrawl.

Positively, I had forgotten all about the business. I suppose because I did not hear who was appointed. It would be a good argument for turning people out of office after 65! But I have always had rather too much of the lawyer faculty of forgetting things when they are done with.

It was very jolly to have you here, and on principles of Christian benevolence you must not be so long in coming again.—Ever yours,

T. H. HUXLEY.

I do not remember being guilty of paying postage—but that doesn't count for much.

The following is an answer to one of the unexpected inquiries which would arrive from all quarters. A member of one of the religious orders working in the Church of England wrote for an authoritative statement on the following point, suggested by passages in section 5 of Chapter I. of the "Elementary Physiology":—When the Blessed Sacrament, consisting, temporally and mundanely speaking, of a wheaten wafer and some wine, is received after about seven hours' fast, is it or is it not "voided like other meats"? In other words, does it not become completely absorbed for the sustenance of the body?

Huxley's help in this physiological question—and his answer was to be used in polemical discussion—was sought because an answer from him would be decisive and would obviate the repetition of statements which to a Catholic were painfully irreverent.

HODESLEA, *Feb.* 3, 1892.

SIR—I regret that you have had to wait so long for a reply to your letter of the 27th. Your question required careful consideration, and I have been much occupied with other matters.

You ask (1), whether the sacramental bread is or is not "voided like other meats"?

That depends on what you mean, firstly by "voided," and, secondly, by "other meats." Suppose any "meat" (I take the word to include drink) to contain no indigestible residuum, there need not be anything "voided" at all—if by "voiding" is meant expulsion from the lower intestine.

Such a meat might be "completely absorbed for the sustenance of the body." Nevertheless, its elements, in fresh combinations, would be eventually "voided" through other channels, *e.g.* the lungs and kidneys. Thus I should say that under normal circumstances all "meats" (that is to say, the material substance of them) are voided sooner or later.

Now, as to the particular case of the sacramental wafer and wine. Taking their composition and the circumstances of administration to be as you state them, it is my opinion that a small residuum will be left undigested, and will be voided by the intestine, while by far the greater part will be absorbed and eventually "voided" by the lungs, skin, and kidneys.

If anyone asserts that the wafer and wine are voided by the intestine as such, that the "pure flour and water" of which the wafer consists pass out unchanged, I am of opinion he is in error.

On the other hand, if anyone maintains that the material substance of the wafer persists, while its accidents change, within the body, and that this identical substance is sooner or later voided, I do not see how he is to be driven out of that position by any scientific reasoning. On the contrary, there is every reason to believe that the elementary particles of the wafer and of the wine which enter the body never lose their identity, or even alter their mass. If one could see one of the atoms of carbon which enter into the composition of the wafer, I conceive it could be followed the whole way—from the mouth to the organ by which it escapes—just as a bit of floating charcoal might be followed into, through, and out of a whirlpool.

On October 6, 1892, died Lord Tennyson. In the course of his busy life, Huxley had not been thrown very closely into contact with him; they would meet at the Metaphysical Society, of which Tennyson was a silent member; and in the *Life of Tennyson* two occasions are recorded on which Huxley visited him:—

Nov. 11, 1871.—Mr. Huxley and Mr. Knowles arrived here (Aldworth) on a visit. Mr. Huxley was charming. We had much talk. He was chivalrous, wide, and earnest, so that one could not but enjoy talking with him. There was a discussion on George Eliot's humility. Huxley and A. both thought her a humble woman, despite a dogmatic manner of assertion that had come upon her latterly in her writings. (*Op. cit.* ii. 110.)

March 17, 1873.—Professor Tyndall and Mr. Huxley called. Mr. Huxley seemed to be universal in his interest, and to have keen enjoyment of life. He spoke of *In Memoriam.* (*Ibid.* ii. 143.)

With this may be compared one of Mr. Wilfrid Ward's reminiscences (*Nineteenth Century*, August 1896).

"Huxley once spoke strongly of the insight into scientific method shown in Tennyson's *In Memoriam*, and pronounced it to be quite equal to that of the greatest experts."

This view of Tennyson appears again in a letter to Sir M. Foster, the Secretary of the Royal Society:—

Was not Tennyson a Fellow of the Royal Society? If so, should not the President and Council take some notice of his death and delegate some one to the funeral to represent them? Very likely you have thought of it already.

He was the only modern poet, in fact I think the only poet since the time of Lucretius, who has taken the trouble to understand the work and tendency of the men of science.

But this was not the only side from which he regarded poetry. He had a keen sense for beauty, the artistic perfection of expression, whether in poetry, prose, or conversation. Tennyson's talk he described thus: "Doric beauty is its characteristic—perfect simplicity, without any ornament or anything artificial." And again, to quote Mr. Wilfrid Ward's reminiscences :—

> Tennyson he considered the greatest English master of melody except Spenser and Keats. I told him of Tennyson's insensibility to music, and he replied that it was curious that scientific men, as a rule, had more appreciation of music than poets or men of letters. He told me of one long talk he had had with Tennyson, and added that immortality was the one dogma to which Tennyson was passionately devoted.
>
> Of Browning, Huxley said: "He really has music in him, Read his poem *The Thrush* and you will see it. Tennyson said to me," he added, "that Browning had plenty of music *in* him, but he could not get it *out*."

EASTBOURNE, *Oct.* 15, 1892.

MY DEAR TYNDALL,—I think you will like to hear that the funeral yesterday lacked nothing to make it worthy of the dead or the living.

Bright sunshine streamed through the windows of the nave, while the choir was in half gloom, and as each shaft of light illuminated the flower-covered bier as it slowly travelled on, one thought of the bright succession of his works between the darkness before and the darkness after. I am glad to say that the Royal Society was represented by four of its chief officers, and nine of the commonalty, including myself. Tennyson has a right to that, as the first poet since Lucretius who has understood the drift of science.

We have heard nothing of you and your wife for ages. Ask her to give us news, good news I hope, of both.

My wife is better than she was, and joins with me in love.—Ever yours affectionately, T. H. HUXLEY.

On his way home from the funeral in Westminster Abbey, Huxley passed the time in the train by shaping out some lines on the dead poet, the form of them suggested partly by some verses of his wife's, partly by Schiller's

> Gib diesen Todten mir heraus,
> Ich muss ihn wieder haben,[1]

[1] *Don Carlos*, Sc. ix.

which came back to his mind in the Abbey. The lines were published in the *Nineteenth Century* for November 1892. He declared that he deserved no credit for the verses; they merely came to him in the train.

His own comparison of them with the sheaf of professed poets' odes which also appeared in the same magazine, comes in a letter to his wife, to whom he sent the poem as soon as it appeared in print.

I know you want to see the poem, so I have cut it and the rest out of the *Nineteenth* just arrived, and sent it.

If I were to pass judgment upon it in comparison with the others, I should say, that as to style it is hammered, and as to feeling human.

They are castings of much prettier pattern and of mainly poetico-classical educated-class sentiment. I do not think there is a line of mine one of my old working-class audience would have boggled over. I would give a penny for John Burns' thoughts about it. (*N.B.*—Highly impartial and valuable criticism.)

He also wrote to Professor Romanes, who had been moved by this new departure to send him a volume of his own poems :—

HODESLEA, *Nov.* 3, 1892.

MY DEAR ROMANES—I must send you a line to thank you very much for your volume of poems. A swift glance shows me much that has my strong sympathy—notably "Pater loquitur," which I shall read to my wife as soon as I get her back. Against all troubles (and I have had my share) I weigh a wife-comrade "treu und fest" in all emergencies.

I have a great respect for the Nazarenism of Jesus—very little for later "Christianity." But the only religion that appeals to me is prophetic Judaism. Add to it something from the best Stoics and something from Spinoza and something from Goethe, and there is a religion for men. Some of these days I think I will make a cento out of the works of these people.

I find it hard enough to write decent prose and have usually stuck to that. The "Gib diesen Todten" I am hardly responsible for, as it did itself coming down here in the train after Tennyson's funeral. The notion came into my head in the Abbey.—Ever yours very faithfully, T. H. HUXLEY.

This winter also Sir R. Owen died, and was buried at

Ham on December 23. The grave ends all quarrels, and Huxley intended to be present at the funeral. But as he wrote to Dr. Foster on the 23rd :—

I had a hard morning's work at University College yesterday, and what with the meeting of the previous evening and that infernal fog, I felt so seedy that I made up my mind to go straight home and be quiet. . . .

There has been a bitter north-easter all day here, and if the like has prevailed at Ham I am glad I kept out of it, as I am by no means fit to cope with anything of that kind to-day. I do not think I was bound to offer myself up to the manes of the departed, however satisfactory that might have been to the poor old man. Peace be with him!

But the old-standing personal differences between the two made it difficult for him to decide what to do with regard to a meeting to raise some memorial to the great anatomist. He writes again to Sir M. Foster, January 8, 1893:—

What am I to do about the meeting about Owen's statue on the 21st? I do not wish to pose either as a humbugging approver or as a sulky disapprover. The man did honest work, enough to deserve his statue, and that is all that concerns the public.

And on the 18th :—

I am inclined to think that I had better attend the meeting at all costs. But I do not see why I should speak unless I am called upon to do so.

I have no earthly objection to say all that I honestly can of good about Owen's work—and there is much to be said about some of it—on the contrary, I should be well pleased to do so.

But I have no reparation to make; if the business were to come over again, I should do as I did. My opinion of the man's character is exactly what it was, and under the circumstances there is a sort of hypocrisy about volunteering anything, which goes against my grain.

The best position for me would be to be asked to second the resolution for the statue—then the proposer would have the field of personal fiction and butter-boat all to himself.

To Sir W. H. Flower

Dec. 28, 1892.

I think you are quite right in taking an active share in the movement for the memorial. When a man is dead and can do no more harm, one must do a sum in subtraction, $\frac{\text{merits}}{\text{deserts}}$ and if the x's are not all minus quantities, give him credit accordingly. But I think that in your appeal, for which the Committee will be responsible, it is this balance of solid scientific merit—a good big one in Owen's case after all deductions—which should be alone referred to. If you follow the example of *Vanity Fair* and call him "a simple-minded man, who, had he been otherwise, would long ago have adorned a title," some of us may choke.

Gladstone, Samuel of Oxford, and Owen belong to a very curious type of humanity, with many excellent and even great qualities and one fatal defect—utter untrustworthiness. Peace be with two of them, and may the political death of the third be speedy and painless!—With our united best wishes, ever yours very faithfully,

T. H. Huxley.

And on January 22, 1893, he writes of the meeting:—

My dear Hooker— . . . . What queer corners one gets into if one only lives long enough! The grim humour of the situation when I was seconding the proposal for a statue to Owen yesterday tickled me a good deal. I do not know how they will report me in the *Times*, but if they do it properly I think you will see that I said no word upon which I could not stand cross-examination.

I chose the office of seconder in order that I might clearly define my position and stop the mouths of blasphemers—who would have ascribed silence or absence to all sorts of bad motives.

Whatever the man might be, he did a lot of first-rate work, and now that he can do no more mischief he has a right to his wages for it.

If I only live another ten years I expect to be made a saint of myself. "Many a better man has been made a saint of," as old Davie Hume said to his housekeeper when they chalked up "St. David's Street" on his wall.

We have been jogging along pretty well, but wife has been creaky, and I got done up in a brutal London fog struggling with the worse fog of the New University.

I am very glad you like my poetical adventure.—Ever yours affectionately, T. H. Huxley.

This speech had an unexpected sequel. Owen's grandson was so much struck by it that he wrote asking Huxley to undertake a critical account of his anatomical work for the book—another most unexpected turn of events. It is not often that a conspicuous opponent of a man's speculations is asked to pass judgment upon his entire work.[1]

At the end of the year an anonymous attack upon the administration of the Royal Society was the occasion for some characteristic words on the endurance of abuse to his old friend, M. Foster, then Secretary of the Royal Society.

Dec. 5, 1892.

MY DEAR FOSTER—The braying of my donkey prevented me from sending a word of sympathy about the noise made by yours. . . . Let not thine heart be vexed because of these sons of Belial. It is all sound and fury with nothing at the bottom of it, and will leave no trace a year hence. I have been abused a deal worse—without the least effect on my constitution or my comfort.

In fact, I am told that Harrison is abusing me just now like a pickpocket in the *Fortnightly*, and I only make the philosophical reflection, No wonder! and doubt if the reading it is worth half a crown.—Ever yours affectionately, T. H. HUXLEY.

The following letter to Mr. Clodd, thanking him for the new edition of Bates' *Naturalist on the Amazons*, helps to remove a reproach sometimes brought against the Royal Society, in that it ignored the claims of distinguished men of Science to membership of the Society:—

HODESLEA, EASTBOURNE,
Dec. 9, 1892.

MY DEAR MR. CLODD—Many thanks for the new edition of "Bates." I was reading the Life last night with great interest; some of the letters you have printed are admirable.

Lyell is hit off to the life. I never read a more penetrating character-sketch. Hooker's letter of advice is as sage as might be expected from a man who practised what he preached about as much as I have done. I shall find material for chaff the next time my old friend and I meet.

I think you are a little hard on the Trustees of the British Museum, and especially on the Royal Society. The former are hampered by the Treasury and the Civil Service regulations. If a

[1] See p. 364.

Bates turned up now I doubt if one could appoint him, however much one wished it, unless he would submit to some idiotic examination. As to the Royal Society, I undertake to say that Bates might have been elected fifteen years earlier if he had so pleased. But the Council cannot elect a man unless he is proposed, and I always understood that it was the *res angusta* which stood in the way.

It is the same with ——. (Twenty years ago) the Royal Society awarded him the Royal Medal, which is about as broad an invitation to join us as we could well give a man. In fact, I do not think he has behaved well in quite ignoring it. Formerly there was a heavy entrance fee as well as the annual subscription. But a dozen or fifteen years ago the more pecunious Fellows raised a large sum of money for the purpose of abolishing this barrier. At present a man has to pay only £3 a year and no entrance. I believe the publications of the Society, which he gets, will sell for more.[1]

So you see it is not the fault of the Royal Society if anybody who ought to be in keeps out on the score of means.—Ever yours very faithfully, T. H. HUXLEY.

[1] The "Fee Reduction Fund," as it is now called, enables the Society to relieve a Fellow from the payment even of his annual fee, so that being F.R.S. costs him nothing.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

CHAPTER XXI

1893

THE year 1893 was, save for the death of three old friends, Andrew Clark, Jowett, and Tyndall, one of the most tranquil and peaceful in Huxley's whole life. He entered upon no direct controversy; he published no magazine articles; to the general misapprehension of the drift of his Romanes Lecture he only replied in the comprehensive form of Prolegomena to a reprint of the lecture. He began to publish his scattered essays in a uniform series, writing an introduction to each volume. While collecting his "Darwiniana" for the second volume, he wrote to Mr. Clodd:—

HODESLEA, EASTBOURNE,
Nov. 18, 1892.

I was looking through *Man's Place in Nature* the other day. I do not think there is a word I need delete, nor anything I need add except in confirmation and extension of the doctrine there laid down. That is great good fortune for a book thirty years old, and one that a very shrewd friend of mine implored me not to publish, as it would certainly ruin all my prospects. I said, like the French fox-hunter in *Punch*, "I shall try."

The shrewd friend in question was none other than Sir William Lawrence, whose own experiences after publishing his book *On Man*, "which now might be read in a Sunday school without surprising anybody," are alluded to in Vol. I. p. 178.

He had the satisfaction of passing on his unfinished work upon *Spirula* to efficient hands for completion; and in the way of new occupation, was thinking of some day "taking up the threads of late evolutionary speculation" in

the theories of Weismann and others,[1] while actually planning out and reading for a series of "Working-Men's Lectures on the Bible," in which he should present to the unlearned the results of scientific study of the documents, and do for theology what he had done for zoology thirty years before.

The scheme drawn out in his note-book runs as follows:—

I. The subject and the method of treating it.
II. Physical conditions:—the place of Palestine in the Old World.
III. The Rise of Israel:—Judges, Samuel, Kings as far as Jeroboam II.
IV. The Fall of Israel.
V. The Rise and Progress of Judaism. Theocracy.
VI. The Final Dispersion.
VII. Prophetism.
VIII. Nazarenism.
IX. Christianity.
X. Muhammedanism.
XI. and XII. The Mythologies.

Although this scheme was never carried out, yet it was constantly before Huxley's mind during the two years left to him. If Death, who had come so near eight years before, would go on seeming to forget him, he meant to use these last days of his life in an effort to illuminate one more portion of the field of knowledge for the world at large.

As the physical strain of the Romanes Lecture and his liability to loss of voice warned him against any future attempt to deliver a course of lectures, he altered his design and prepared to put the substance of these Lectures to Working-Men into a Bible History for young people. And indeed, he had got so far with his preparation, that the latter heading was down in his list of work for the last year of his life, 1895. But nothing of it was ever written. Until the work was actually begun, even the framework upon which it was to be shaped remained in his mind, and the copious marks in his books of reference were the mere guide-posts to a strong memory, which retained not words and phrases, but salient facts and the knowledge of where to find them again.

[1] See letter of September 28, to Romanes.

I find only two occasions on which he wrote to the *Times* this year; one, when the crusade was begun to capture the Board Schools of London for sectarianism, and it was suggested that, when on the first School Board, he had approved of some such definite dogmatic teaching. This he set right at once in the following letter of April 28, with which may be compared the letter to Lord Farrer of November 6, 1894.

In a leading article of your issue to-day you state, with perfect accuracy, that I supported the arrangement respecting religious instruction agreed to by the London School Board in 1871, and hitherto undisturbed. But you go on to say that "the persons who framed the rule" intended it to include definite teaching of such theological dogmas as the Incarnation.

I cannot say what may have been in the minds of the framers of the rule; but, assuredly, if I had dreamed that any such interpretation could fairly be put upon it, I should have opposed the arrangement to the best of my ability.

In fact, a year before the rule was framed I wrote an article in the *Contemporary Review*, entitled "The Board Schools—what they can do, and what they may do," in which I argued that the terms of the Education Act excluded such teaching as it is now proposed to include. And I supported my contention by the following citation from a speech delivered by Mr. Forster at the Birkbeck Institution in 1870:—

"I have the fullest confidence that in the reading and explaining of the Bible, what the children will be taught will be the great truths of Christian life and conduct, which all of us desire they should know, and that no effort will be made to cram into their poor little minds, theological dogmas which their tender age prevents them from understanding."

The other was on a lighter, but equally perennial point of interest, being nothing less than the Sea Serpent. In the *Times* of January 11, he writes, that while there is no reason against a fifty-foot serpent existing as in Cretaceous seas, still the evidence for its existence is entirely inconclusive. He goes on to tell how a scientific friend's statement once almost convinced him until he read the quartermaster's deposition, which was supposed to corroborate it. The details made the circumstances alleged by the former impossible, and on pointing this out, he heard no more of

the story, which was a good example of the mixing up of observations with conclusions drawn from them.

And on the following day he replies to another such detailed story—

> Admiral Mellersh says, "I saw a huge snake, at least 18 feet long," and I have no doubt he believes he is simply stating a matter of fact. Yet his assertion involves a hypothesis of the truth of which I venture to be exceedingly doubtful. How does he know that what he saw was a snake? The neighbourhood of a creature of this kind, within axe-stroke, is hardly conducive to calm scientific investigation, and I can answer for it that the discrimination of genuine sea-snakes in their native element from long-bodied fish is not always easy. Further, that "back fin" troubles me; looks, if I may say so, very fishy.
>
> If the caution about mixing up observations with conclusions, which I ventured to give yesterday, were better attended to, I think we should hear very little either about antiquated sea-serpents or new "mesmerism."

It is perhaps not superfluous to point out that in this, as in other cases of the marvellous, he did not merely pooh-pooh a story on the ground of its antecedent improbability, but rested his acceptance or rejection of it upon the strength of the evidence adduced. On the other hand, the weakness of such evidence as was brought forward time after time, was a justification for refusing to spend his time in listening to similar stories based on similar testimony.

Among the many journalistic absurdities which fall in the way of celebrities, two which happened this year are worth recording; the one on account of its intrinsic extravagance, which succeeded nevertheless in taking in quite a number of sober folk; the other on account of the letter it drew from Huxley about his cat. The former appeared in the shape of a highly-spiced advertisement about certain Manx Mannikins, which could walk, draw, play, in fact do everything but speak—were living pets which might be kept by anyone, and indeed Professor Huxley was the possessor of a remarkably fine pair of them. Apply, enclosing stamps etc. Of course, the wonderful mannikins were nothing more than the pair of hands which anybody could dress up according to the instructions of the advertiser; but it was astonishing how many estimable persons took them for some

lusus naturæ. A similar advertisement in 1880 had been equally successful, and one exalted personage wrote by the hand of a secretary to say what pleasure and interest had been excited by the description of these strange creatures, and begging Professor Huxley to state if the account was true. Accordingly on January 27 he writes to his wife, who was on a visit to her daughter:—

Yesterday two ladies called to know if they could see the Manx Mannikins. I think of having a board put up to say that in the absence of the Proprietress the show is closed.

The other incident was a request for any remarks which might be of use in an article upon the Home Pets of Celebrities. I give the letter written in answer to this, as well as descriptions of the same cat's goings-on in the absence of its mistress.

To Mr. J. G. Kitton

Hodeslea, *April* 12, 1893.

A long series of cats has reigned over my household for the last forty years, or thereabouts, but I am sorry to say that I have no pictorial or other record of their physical and moral excellencies.

The present occupant of the throne is a large, young, grey Tabby —Oliver by name. Not that he is in any sense a protector, for I doubt whether he has the heart to kill a mouse. However, I saw him catch and eat the first butterfly of the season, and trust that this germ of courage, thus manifested, may develop with age into efficient mousing.

As to sagacity, I should say that his judgment respecting the warmest place and the softest cushion in a room is infallible—his punctuality at meal times is admirable; and his pertinacity in jumping on people's shoulders, till they give him some of the best of what is going, indicates great firmness.

To his Youngest Daughter

Hodeslea, Eastbourne,
Jan. 8, 1893.

I wish you would write seriously to M——. She is not behaving well to Oliver. I have seen handsomer kittens, but few more lively, and energetically destructive. Just now he scratched away at some-

thing that M—— says cost 13s. 6d. a yard—and reduced more or less of it to combings.

M—— therefore excludes him from the dining-room, and all those opportunities of higher education which he would naturally have in *my* house.

I have argued that it is as immoral to place 13s. 6d. a yardnesses within reach of kittens as to hang bracelets and diamond rings in the front garden. But in vain. Oliver is banished—and the protector (not Oliver) is sat upon.—In truth and justice aid your Pa.

[This letter is embellished with fancy portraits of

Oliver when most quiescent (tail up; ready for action).

O. as polisher (tearing at the table leg).

O. as plate basket investigator.

O. as gardener (destroying plants in a pot).

O. as stocking knitter (a wild tangle of cat and wool).

O. as political economist making good for trade at 13s. 6d. a yard (pulling at a hassock).]

The following to Sir John Evans refers to a piece of temporary forgetfulness.

HODESLEA, EASTBOURNE,
March 19, 1893.

MY DEAR EVANS—It is curious what a difference there is between intentions and acts, especially in the matter of sending cheques. The moment I saw the project of the Lawes and Gilbert testimonial in the *Times*, I sent my contribution in imagination—and it is only the arrival of this circular which has waked me up to the necessity of supplementing my ideal cheque by the real one inclosed.—Ever yours very faithfully, T. H. HUXLEY.

Reference has been made to the writing of the Romanes Lecture in 1892. Mr. Gladstone had already consented to deliver the first lecture in that year; and early in the summer Professor Romanes sounded Huxley to find out whether he would undertake the second lecture for 1893. Huxley suggested a possible bar in his precarious health; but subject to this possibility, if the Vice-Chancellor did not regard it as a complete disability, was willing to accept a formal invitation.

Professor Romanes reassured him upon this point, and further begged him, if possible, to be ready to step into the breach if Mr. Gladstone should be prevented from lecturing

in the following autumn. The situation became irresistible, and the second of the following letters to Mr. Romanes displays no more hesitation.

TO PROFESSOR ROMANES

HODESLEA, *June* 3, 1892.

I should have written to you yesterday, but the book did not arrive till this morning. Very many thanks for it. It looks appetising, and I look forward to the next course.

As to the Oxford lecture, "Verily, thou almost persuadest me," though I thought I had finished lecturing. I really should like to do it; but I have a scruple about accepting an engagement of this important kind, which I might not be able to fulfil.

I am astonishingly restored, and have not had a trace of heart trouble for months. But I am quite aware that I am, physically speaking, on good behaviour—and maintain my condition only by taking an amount of care which is very distasteful to me.

Furthermore, my wife's health is, I am sorry to say, extremely precarious. She was very ill a fortnight ago, and to my very great regret, as well as hers, we are obliged to give up our intended visit to Balliol to-morrow. She is quite unfit to travel, and I cannot leave her here alone for three days.

I think the state of affairs ought to be clear to the Vice-Chancellor. If, in his judgment, it constitutes no hindrance, and he does me the honour to send the invitation, I shall accept it.

TO THE SAME

HODESLEA, *June* 7, 1892.

I am afraid that age hath not altogether cleared the spirit of mischief out of my blood; and there is something so piquant in the notion of my acting as substitute for Gladstone that I will be ready if necessity arises.

Of course I will keep absolutely clear of Theology. But I have long had fermenting in my head, some notions about the relations of Ethics and Evolution (or rather the absence of such as are commonly supposed), which I think will be interesting to such an audience as I may expect. "Without prejudice," as the lawyers say, that is the sort of topic that occurs to me.

TO THE SAME

HODESLEA, *Oct.* 30, 1892.

I had to go to London in the middle of last week about the Gresham University business, and I trust I have put a very long

nail into the coffin of that scheme. For which good service you will forgive my delay in replying to your letter. I read all about your show—why not call it "George's Gorgeous," *tout court?*

I should think that there is no living man, who, on such an occasion, could intend and contrive to say so much and so well (in form) without ever rising above the level of antiquarian gossip.

My lecture would have been ready if the G.O.M. had failed you, but I am very glad to have six months' respite, as I now shall be able to write and rewrite it to my heart's content.

I will follow the Gladstonian precedent touching cap and gown —but I trust the Vice-Chancellor will not ask me to take part in a "Church Parade" and read the lessons. I couldn't—really.

As to the financial part of the business, to tell you the honest truth, I would much rather not be paid at all for a piece of work of this kind. I am no more averse to turning an honest penny by my brains than any one else in the ordinary course of things—quite the contrary; but this is not an ordinary occasion. However, this is a pure matter of taste, and I do not want to set a precedent which might be inconvenient to other people—so I agree to what you propose.

By the way, is there any type-writer who is to be trusted in Oxford? Some time ago I sent a MS. to a London type-writer, and to my great disgust I shortly afterwards saw an announcement that I was engaged on the topic.

On the following day he writes to his wife, who was staying with her youngest daughter in town :—

The Vice-Chancellor has written to me and I have fixed May—exact day by and by. Mrs. Romanes has written a crispy little letter to remind us of our promise to go there, and I have chirrupped back.

The "chirrup" ran as follows :—

HODESLEA, *Nov.* 1, 1892.

MY DEAR MRS. ROMANES—I have just written to the Vice-Chancellor to say that I hope to be at his disposition any time next May.

My wife is "larking"—I am sorry to use such a word, but what she is pleased to tell me of her doings leaves me no alternative—in London, whither I go on Thursday to fetch her back—in chains, if necessary. But I know, in the matter of being "taken in and done for" by your hospitable selves, I may, for once, speak for her as well as myself.

Don't ask anybody above the rank of a younger son of a Peer—

because I shall not be able to go in to dinner before him or her—and that part of my dignity is naturally what I prize most.

Would you not like me to come in my P.C. suit? All ablaze with gold, and costing a sum with which I could buy oh! so many books!

Only if your late experiences should prompt you to instruct your other guests not to contradict me—don't. I rather like it.—Ever yours very faithfully, T. H. HUXLEY.

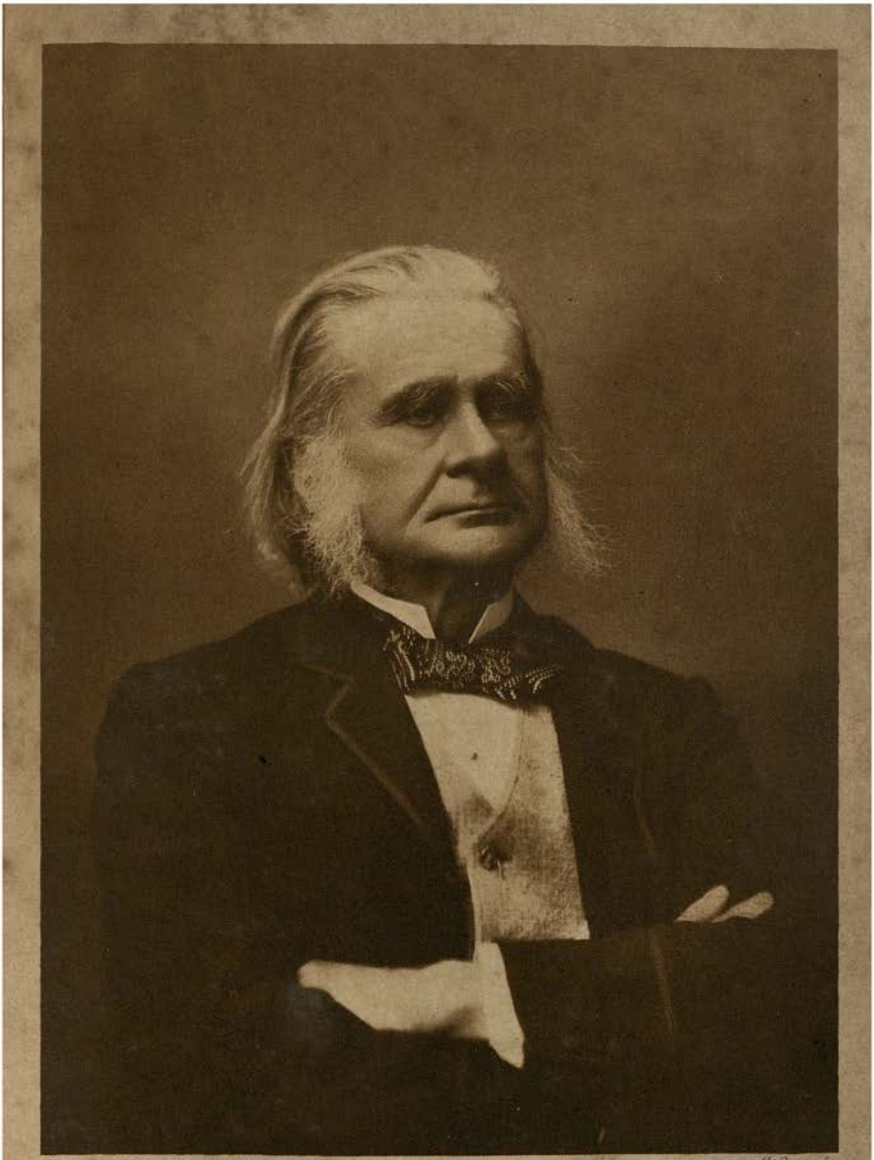
Bon Voyage! You can tell Mr. Jones[1] that I will have him brought before the Privy Council and fined, as in the good old days, if he does not treat you properly.

This letter was afterwards published in Mrs. Romanes' Life of her husband, and three letters on that occasion, and particularly that in which Huxley tried to guard her from any malicious interpretation of his jests, are to be found on p. 380.

On the afternoon of May 18, 1893, he delivered at Oxford his Romanes Lecture, on "Evolution and Ethics," a study of the relation of ethical and evolutionary theory in the history of philosophy, the text of which is that while morality is necessarily a part of the order of nature, still the ethical principle is opposed to the self-regarding principle on which cosmic evolution has taken place. Society is a part of nature, but would be dissolved by a return to the natural state of simple warfare among individuals. It follows that ethical systems based on the principles of cosmic evolution are not logically sound. A study of the essays of the foregoing ten years will show that he had more than once enunciated this thesis, and it had been one of the grounds of his long-standing criticism of Mr. Spencer's system.

Nevertheless, the doctrine seemed to take almost everybody by surprise. The drift of the lecture was equally misunderstood by critics of opposite camps. Huxley was popularly supposed to hold the same views as Mr. Spencer—for were they not both Evolutionists? On general attention being called to the existing difference between their views, some jumped to the conclusion that Huxley was offering a general recantation of evolution, others that he had discarded his former theories of ethics. On the one hand he was

[1] The hotel-keeper in Madeira.



T. H. Huxley.

From a photograph by Mayall, 1893.

branded as a deserter from free thought; on the other, hailed almost as a convert to orthodoxy. It was irritating, but little more than he had expected. The conditions of the lecture forbade any reference to politics or religion; hence much had to be left unsaid, which was supplied next year in the Prolegomena prefacing the re-issue of the lecture.

After all possible trimming and compression, he still feared the lecture would be too long, and would take more than a hour to deliver, especially if the audience was likely to be large, for the numbers must be considered in reference to the speed of speaking. But he had taken even more pains than usual with it. "The Lecture," he writes to Professor Romanes on April 19, "has been in type for weeks, if not months, as I have been taking an immensity of trouble over it. And I can judge of nothing till it is in type." But this very precaution led to unexpected complications. When the proposition to lecture was first made to him, he was not sent a copy of the statute ordering that publication in the first instance should lie with the University Press; and in view of the proviso that "the Lecturer is free to publish on his own behalf in any other form he may like," he had taken Prof. Romanes' original reference to publication by the Press to be a subsidiary request to which he gladly assented. However, a satisfactory arrangement was speedily arrived at with the publishers; Huxley remarking:—

"All I have to say is, do not let the University be in any way a loser by the change. If the V.-C. thinks there is any risk of this, I will gladly add to what Macmillan pays. That matter can be settled between us."

However, he had not forgotten the limitation of his subject in respect of religion and politics, and he repeatedly refers to his careful avoidance of these topics as an "egg-dance." And wishing to reassure Mr. Romanes on this head, he writes on April 22:—

There is no allusion to politics in my lecture, nor to any religion except Buddhism, and only to the speculative and ethical side of that. If people apply anything I say about these matters to modern philosophies, except evolutionary speculation, and religions, that is not my affair. To be honest, however, unless I thought

they would, I should never have taken all the pains I have bestowed on these 36 pages.

But these words conjured up terrible possibilities, and Mr. Romanes wrote back in great alarm to ask the exact state of the case. The two following letters show that the alarm was groundless :—

HODESLEA, *April* 26, 1893.

MY DEAR ROMANES—I fear, or rather hope, that I have given you a very unnecessary scare.

You may be quite sure, I think, that, while I should have refused to give the lecture if any pledge of a special character had been proposed to me, I have felt very strongly bound to you to take the utmost care that no shadow of a just cause for offence should be given, even to the most orthodox of Dons.

It seems to me that the best thing I can do is to send you the lecture as it stands, notes and all. But please return it within two days at furthest, and consider it *strictly confidential* between us two (I am not excluding Mrs. Romanes, if she cares to look at the paper). No consideration would induce me to give any ground for the notion that I had submitted the lecture to anyone but yourself.

If there is any phrase in the lecture which you think likely to get you into trouble, out it shall come or be modified in form.

If the whole thing is too much for the Dons' nerves—I am no judge of their delicacy—I am quite ready to give up the lecture.

In fact I do not know whether I shall be able to make myself heard three weeks hence, as the influenza has left its mark in hoarseness and pain in the throat after speaking.

So you see if the thing is altogether too wicked there is an easy way out of it.—Ever yours very faithfully, T. H. HUXLEY.

HODESLEA, *April* 28, 1893.

MY DEAR ROMANES—My mind is made easy by such a handsome acquittal from you and the Lady Abbess, your coadjutor in the Holy Office.

My wife, who is my inquisitor and confessor in ordinary, has gone over the lecture twice, without scenting a heresy, and if she and Mrs. Romanes fail—a fico for a mere male don's nose!

From the point of view of the complete argument, I agree with you about note 19. But the dangers of open collision with orthodoxy on the one hand and Spencer on the other, increased with the square of the enlargement of the final pages, and I was most anxious for giving no handle to anyone who might like to say I had used the

lecture for purposes of attack. Moreover, in spite of all reduction, the lecture is too long already.

But I think it not improbable that in spite of my meekness and peacefulness, neither the one side nor the other will let me alone. And then you see, I shall have an opportunity of making things plain, under no restriction. You will not be responsible for anything said in the second edition, nor can the Donniest of Dons grumble.—Ever yours very faithfully, T. H. HUXLEY.

The double negative is Shakspearian. See Hamlet, act ii. sc. 2.

Unfortunately for the entire success of the lecture, he was suffering from the results of influenza, more especially a loss of voice. He writes (April 18):—

After getting through the winter successfully I have had the ill-fortune to be seized with influenza. I believe I must have got it from the microbes haunting some of the three hundred doctors at the Virchow dinner.[1]

I had next to no symptoms except debility, and though I am much better I cannot quite shake that off. As usual with me it affects my voice. I hope this will get right before this day month, but I expect I shall have to nurse it. I do not want to interfere with any of your hospitable plans, and I think if you will ensure me quiet on the morning of the 18th (I understand the lecture is in the afternoon) it will suffice. After the thing is over I am ready for anything from pitch and toss onwards.

Two more letters dated before the 18th of May touch on the circumstances of the lecture. One is to his son-in-law, John Collier; the other to his old friend Tyndall, the last he ever wrote him, and containing a cheery reference to the advance of old age.

HODESLEA, EASTBOURNE,
May 9, 1893.

MY DEAR JACK—. . . M—— is better, and I am getting my voice back. But may St. Ernulphus' curse descend on influenza microbes! They tried to work their way out at my nose, and converted me into a disreputable Captain Costigan-looking person ten days ago. Now they are working at my lips.

For the credit of the family I hope I shall be more reputable by the 18th.

I hope you will appreciate my dexterity. The lecture is a regular egg-dance. That I should discourse on Ethics to the Uni-

[1] On the 16th March.

versity of Oxford and say all I want to say, without a word anybody can quarrel with, is decidedly the most piquant occurrence in my career. . . .—Ever yours affectionately, PATER.

P.S. to be read first.

EASTBOURNE, *May* 15, 1893.

MY DEAR TYNDALL—There are not many apples (and those mostly of the crab sort) left upon the old tree, but I send you the product of the last shaking. Please keep it out of any hands but your wife's and yours till Thursday, when I am to "stand and deliver" it, if I have voice enough, which is doubtful. The sequelæ of influenza in my case have been mostly pimples and procrastination, the former largely on my nose, so that I have been a spectacle. Besides these, loss of voice. The pimples are mostly gone and the procrastination is not much above normal, but what will happen when I try to fill the Sheldonian Theatre is very doubtful.

Who would have thought thirty-three years ago, when the great "Sammy" fight came off, that the next time I should speak at Oxford would be in succession to Gladstone, on "Evolution and Ethics" as an invited lecturer?

There was something so quaint about the affair that I really could not resist, though the wisdom of putting so much strain on my creaky timbers is very questionable. Mind you wish me well through it at 2.30 on Thursday.

I wish we could have better news of you. As to dying by inches, that is what we are all doing, my dear old fellow; the only thing is to establish a proper ratio between inch and time. Eight years ago I had good reason to say the same thing of myself, but my inch has lengthened out in a most extraordinary way. Still I confess we are getting older; and my dear wife has been greatly shaken by repeated attacks of violent pain which seizes her quite unexpectedly. I am always glad, both on her account and my own, to get back into the quiet and good air here as fast as possible, and in another year or two, if I live so long, I shall clear out of all engagements that take me away. . . . T. H. HUXLEY.

Not to be answered, and you had better get Mrs. Tyndall to read it to you or you will say naughty words about the scrawl.

Sanguine as he had resolved to be about the recovery of his voice, his fear lest "1000 out of the 2000 won't hear" was very near realisation. The Sheldonian Theatre was thronged before he appeared on the platform, a striking presence in his D.C.L. robes, and looking very leonine with his long silvery gray hair sweeping back in one long wave from his forehead, and the rugged squareness of his features

tempered by the benignity of an old age which has seen much and overcome much. He read the lecture from a printed copy, not venturing, as he would have liked, upon the severe task of speaking it from memory, considering its length and the importance of preserving the exact wording. He began in a somewhat low tone, nursing his voice for the second half of the discourse. From the more distant parts of the theatre came several cries of "speak up"; and after a time a rather disturbing migration of eager undergraduates began from the galleries to the body of the hall. The latter part was indeed more audible than the first; still a number of the audience were disappointed in hearing imperfectly. However, the lecture had a large sale; the first edition of 2000 was exhausted by the end of the month; and another 700 in the next ten days.

After leaving Oxford, and paying a pleasant visit to one of the Fannings (his wife's nephew) at Tew, Huxley intended to visit another of the family, Mrs. Crowder, in Lincolnshire, but on reaching London found himself dead beat and had to retire to Eastbourne, whence he writes to Sir M. Foster and to Mr. Romanes.

HODESLEA, *May* 26, 1893.

MY DEAR FOSTER—Your letter has been following me about. I had not got rid of my influenza at Oxford, so the exertion and the dinner parties together played the deuce with me.

We had got so far as the Great Northern Hotel on our way to some connections in Lincolnshire, when I had to give it up and retreat here to begin convalescing again.

I do not feel sure of coming to the Harvey affair after all. But if I do, it will be alone, and I think I had better accept the hospitality of the college; which will by no means be so jolly as Shelford, but probably more prudent, considering the necessity of dining out.

The fact is, my dear friend, I am getting old.

I am very sorry to hear you have been doing your influenza also. It's a beastly thing, as I have it, no symptoms except going flop.—
Ever yours, T. H. HUXLEY.

Nobody sees that the lecture is a very orthodox production on the text (if there is such a one), "Satan the Prince of this world."

I think the remnant of influenza microbes must have held a meeting in my *corpus* after the lecture, and resolved to reconquer the territory. But I mean to beat the brutes.

"I shall be interested," he writes to Mr. Romanes, "in the article on the lecture. The papers have been asinine." This was an article which Mr. Romanes had told him was about to appear in the *Oxford Magazine*. And on the 30th he writes again :—

Many thanks for the *Oxford Magazine*. The writer of the article is about the only critic I have met with yet who understands my drift. My wife says it is a "sensible" article, but her classification is a very simple one—sensible articles are those that contain praise, "stupid" those that show insensibility to my merits!

Really I thought it very sensible, without regard to the plums in the pudding.

But the criticism, "sensible" not merely in the humorous sense, which he most fully appreciated was that of Professor Seth, in a lecture entitled "Man and Nature." He wrote to him on October 27 :—

DEAR PROFESSOR SETH—A report of your lecture on "Man and Nature" has just reached me. Accept my cordial thanks for defending me, and still more for understanding me.

I really have been unable to understand what my critics have been dreaming of when they raise the objection that the ethical process being part of the cosmic process cannot be opposed to it.

They might as well say that artifice does not oppose nature, because it is part of nature in the broadest sense.

However, it is one of the conditions of the "Romanes Lecture" that no allusion shall be made to religion or politics. I had to make my omelette without breaking any of those eggs, and the task was not easy.

The prince of scientific expositors, Faraday, was once asked, "How much may a popular lecturer suppose his audience knows?" He replied emphatically, "*Nothing*." Mine was not exactly a popular audience, but I ought not to have forgotten Faraday's rule.—Yours very faithfully, T. H. HUXLEY.

A letter of congratulation to Lord Farrer on his elevation to the peerage contains an ironical reference to the general tone of the criticisms on his lecture :—

HODESLEA, *June* 5, 1893.

CI DEVANT CITOYEN PÉTION (autrefois le vertueux)—You have lost all chance of leading the forces of the County Council to the attack of the Horse-Guards.

You will become an émigré, and John Burns will have to content himself with the heads of the likes of me. As the Jacobins said of Lavoisier, the Republic has no need of men of science.

But this prospect need not interfere with sending our hearty congratulations to Lady Farrer and yourself.

As for your criticisms, don't you know that I am become a reactionary and secret friend of the clerics?

My lecture is really an effort to put the Christian doctrine that Satan is the Prince of this world upon a scientific foundation.

Just consider it in this light, and you will understand why I was so warmly welcomed in Oxford. (N.B.—The only time I spoke before was in 1860, when the great row with Samuel came off!!)—Ever yours very faithfully, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
July 15, 1893.

MY DEAR SKELTON—I fear I must admit that even a Gladstonian paper occasionally tells the truth. They never mean to, but we all have our lapses from the rule of life we have laid down for ourselves, and must be charitable.

The fact is, I got influenza in the spring, and have never managed to shake right again, any tendency that way being well counteracted by the Romanes lecture and its accompaniments.

So we are off to the Maloja to-morrow. It mended up the shaky old heart-pump five years ago, and I hope will again.

I have been in Orkney, and believe in the air, but I cannot say quite so much for the scenery. I thought it just a wee little bit, shall I say, bare? But then I have a passion for mountains.

I shall be right glad to know what your H.O.M.[1] has to say about about Ethics and Evolution. You must remember that my lecture was a kind of egg-dance. Good manners bound me over to say nothing offensive to the Christians in the amphitheatre (I was in the arena), and truthfulness, on the other hand, bound me to say nothing that I did not fully mean. Under these circumstances one has to leave a great many i's undotted and t's uncrossed.

Pray remember me very kindly to Mrs. Skelton, and believe me—Yours ever, T. H. HUXLEY.

And again on Oct. 17:—

Ask your Old Man of Hoy to be so good as to suspend judgment until the Lecture appears again with an appendix in that collection of volumes the bulk of which appals me.

Didn't I see somewhere that you had been made Poor Law pope,

[1] The "Old Man of Hoy," a pseudonym under which Sir J. Skelton wrote.

or something of the sort? I congratulate the poor more than I do you, for it must be a weary business trying to mend the irremediable. (No, I am *not* glancing at the whitewashing of Mary.)

Here may be added two later letters bearing in part upon the same subject:—

HODESLEA, EASTBOURNE,
March 23, 1894.

DEAR SIR—I ought to have thanked you before now for your letter about Nietzsche's works, but I have not much working time, and I find letter-writing a burden, which I am always trying to shirk.

I will look up Nietzsche's, though I must confess that the profit I obtain from German authors on speculative questions is not usually great.

As men of research in positive science they are magnificently laborious and accurate. But most of them have no notion of style, and seem to compose their books with a pitchfork.

There are two very different questions which people fail to discriminate. One is whether evolution accounts for morality, the other whether the principle of evolution in general can be adopted as an ethical principle.

The first, of course, I advocate, and have constantly insisted upon. The second I deny, and reject all so-called evolutional ethics based upon it.—I am yours faithfully, T. H. HUXLEY.

Thomas Common, Esq.

HODESLEA, *August* 31, 1894.

DEAR PROFESSOR SETH—I have come to a stop in the issue of my essays for the present, and I venture to ask your acceptance of the set which I have desired my publishers to send you.

I hope that at present you are away somewhere, reading novels or otherwise idling, in whatever may be your pet fashion.

But some day I want you to read the "Prolegomena" to the reprinted Romanes Lecture.

Lately I have been re-reading Spinoza (much read and little understood in my youth).

But that noblest of Jews must have planted no end of germs in my brains, for I see that what I have to say is in principle what he had to say, in modern language.—Ever yours very faithfully,

T. H. HUXLEY.

The following letters with reference to the long unfinished memoir on "Spirula" for the *Challenger* reports tell their own story. Huxley was very glad to find some competent

person to finish the work which his illness had incapacitated him from completing himself. It had been a burden on his conscience; and now he gladly put all his plates and experience at the disposal of Professor Pelseneer, though he had nothing written and would not write anything. He had no wish to claim even joint authorship for the completed paper; when the question was first raised, he desired merely that it should be stated that such and such drawings were made by him; but when Professor Pelseneer insisted that both names should appear as joint authors, he consented to this solution of the question.

HODESLEA, *Sept.* 17, 1893.

DEAR MR. MURRAY[1]—If the plates of *Spirula* could be turned to account a great burthen would be taken off my mind.

Professor Pelseneer is every way competent to do justice to the subject; and he has just what I needed, namely another specimen to check and complete the work; and besides that, the physical capacity for dissection and close observation, of which I have had nothing left since my long illness.

Will you be so good as to tell Professor Pelseneer that I shall be glad to place the plates at his disposal and to give him all the explanations I can of the drawings, whenever it may suit his convenience to take up the work?

Nothing beyond mere fragments remained of the specimen.—I am, yours very faithfully, T. H. HUXLEY.

I return Pelseneer's letter.

HODESLEA, *Sept.* 30, 1893.

DEAR PROFESSOR PELSENEER—I send herewith (by this post) a full explanation of the plates of *Spirula* (including those of which you have unlettered copies). I trust you will not be too much embarrassed by my bad handwriting, which is a plague to myself as well as to other people.

My hope is that you will be good enough to consider these figures as materials placed in your hands, to be made useful in the memoir on *Spirula*, which I trust you will draw up, supplying the defects of my work and checking its accuracy.

You will observe that a great deal remains to be done. The muscular system is untouched; the structure and nature of the terminal circumvallate papilla have to be made out; the lingual teeth must be re-examined; and the characters of the male determined. If I recollect rightly, Owen published something about the last point.

[1] Now K.C.B.; Director of the "Reports of the *Challenger*."

If I can be of any service to you in any questions that arise, I shall be very glad; but as I am putting the trouble of the work on your shoulders, I wish you to have the credit of it.

So far as I am concerned, all that is needful is to say that such and such drawings were made by me.—Ever yours very faithfully,

T. H. HUXLEY.

HODESLEA, *Oct.* 12, 1893.

DEAR PROFESSOR PELSENEER—I am very glad to hear from you that the homology of the cephalopod arms with the gasteropod foot is now generally admitted. When I advocated that opinion in my memoir on the "Morphology of the Cephalous Mollusca," some forty years ago, it was thought a great heresy.

As to publication; I am quite willing to agree to whatever arrangement you think desirable, so long as you are kind enough to take all trouble (but that of "consulting physician") off my shoulders. Perhaps putting both names to the memoir, as you suggest, will be the best way. I cannot undertake to write anything, but if you think I can be of any use as an adviser or critic, do not hesitate to demand my services.—Ever yours very faithfully,

T. H. HUXLEY.

Although in February he had stayed several days in town with the Donnellys, who "take as much care of me as if I were a piece of old china," and had attended a levée and a meeting of his London University Association, had listened with interest to a lecture of Professor Dewar, who "made liquid oxygen by the pint," and dined at Marlborough House, the influenza had prevented him during the spring from fulfilling several engagements in London; but after his return from Oxford he began to recruit in the fine weather, and found delightful occupation in putting up a rockery in the garden for his pet Alpine plants.

In mid June he writes to his wife, then on a visit to one of her daughters:—

What a little goose you are to go having bad dreams about me—who am like a stalled ox—browsing in idle comfort—in fact, idle is no word for it. Sloth is the right epithet. I can't get myself to do anything but potter in the garden, which is looking lovely.

On June 21 he went to Cambridge for the Harvey Celebration at Gonville and Caius College, and made a short speech.

The dinner last night (he writes) was a long affair, and I was the last speaker; but I got through my speech very well, and was heard by everybody, I am told.

But as is the way with influenza, it was thrown off in the summer only to return the next winter, and on the eve of the Royal Society Anniversary Dinner he writes to Sir M. Foster:—

I am in rather a shaky and voiceless condition, and unless I am more up to the mark to-morrow morning I shall have to forgo the dinner, and, what is worse, the chat with you afterwards.

One consequence of the spring attack of influenza was that this year he went once more to the Maloja, staying there from July 21 to August 25.

HODESLEA, EASTBOURNE,
July 9, 1893.

MY DEAR HOOKER—What has happened to the *x* meeting you proposed? However, it does not matter much to me now, as Hames, who gave me a thorough overhauling in London, has packed me off to the Maloja again, and we start, if we can, on the 17th.

It is a great nuisance, but the dregs of influenza and the hot weather between them have brought the weakness of my heart to the front, and I am gravitating to the condition in which I was five or six years ago. So I must try the remedy which was so effectual last time.

We are neither of us very fit, and shall have to be taken charge of by a courier. Fancy coming to that!

Let me be a warning to you, my dear old man. Don't go giving lectures at Oxford and making speeches at Cambridge, and above all things don't, oh don't go getting influenza, the microbes of which would be seen under a strong enough microscope to have this form.

[Sketch of an active little black demon.]

T. H. HUXLEY.

Though not so strikingly as before, the high Alpine air was again a wonderful tonic to him. His diary still contains a note of occasional long walks; and once more he was the centre of a circle of friends, whose cordial recollections of their pleasant intercourse afterwards found expression in a lasting memorial. Beside one of his favourite walks, a narrow pathway skirting the blue lakelet of Sils, was placed

a gray block of granite. The face of this was roughly smoothed, and upon it was cut the following inscription :—

In memory of the illustrious English Writer and Naturalist, Thomas Henry Huxley, who spent many summers at the Kursaal, Maloja.

In a letter to Sir J. Hooker, of October 1, he describes the effects of his trip, and his own surprise at being asked to write a critical account of Owen's work :—

HODESLEA, EASTBOURNE,
Oct. 1, 1893.

MY DEAR HOOKER—I am no better than a Gadarene swine for not writing to you from the Maloja, but I was too procrastinatingly lazy to expend even that amount of energy. I found I could walk as well as ever, but unless I was walking I was everlastingly seedy, and the wife was unwell almost all the time. I am inclined to think that it is coming home which is the most beneficial part of going abroad, for I am remarkably well now, and my wife is very much better.

I trust the impaled and injudicious Richard [1] is none the worse. It is wonderful what boys go through (also what goes through them).

You will get all the volumes of my screeds. I was horrified to find what a lot of stuff there was—but don't acknowledge them unless the spirit moves you. . . . I think that on Natural Inequality of Man will be to your taste.

Three, or thirty, guesses and you shall not guess what I am about to tell you.

Rev. Richard Owen has written to me to ask me to write a concluding chapter for the biography of his grandfather—containing a "critical" estimate of him and his work!!! Says he is moved thereto by my speech at the meeting for a memorial.

There seemed nothing for me to do but to accept as far as the scientific work goes. I declined any personal estimate on the ground that we had met in private society half a dozen times.

If you don't mind being bothered I should like to send you what I write and have your opinion about it.

You see Jowett is going or gone. I am very sorry we were obliged to give up our annual visit to him this year. But I was quite unable to stand the exertion, even if Hames had not packed me off. How one's old friends are dropping!

Romanes gave me a pitiable account of himself in a letter the

[1] Sir J. Hooker's youngest son, who had managed to spike himself on a fence.

other day. He has had an attack of hemiplegic paralysis, and tells me he is a mere wreck. That means that the worst anticipations of his case are being verified. It is lamentable.

Take care of yourself, my dear old friend, and with our love to you both, believe me, ever yours, T. H. HUXLEY.

Not long after his return he received a letter from a certain G—— S——, who wrote from Southampton detailing a number of observations he had made upon the organisms to be seen with a magnifying glass in an infusion of vegetable matter, and as "an ignoramus," apologised for any appearance of conceit in so doing, while asking his advice as to the best means of improving his scientific knowledge. Huxley was much struck by the tone of the letter and the description of the experiments, and he wrote back:—

HODESLEA, *Nov.* 9, 1893.

SIR—We are all "ignoramuses" more or less—and cannot reproach one another. If there were any sign of conceit in your letter, you would not get this reply.

On the contrary, it pleases me. Your observations are quite accurate and clearly described—and to be accurate in observation and clear in description is the first step towards good scientific work.

You are seeing just what the first workers with the microscope saw a couple of centuries ago.

Get some such book as Carpenter's "On the Microscope" and you will see what it all means.

Are there no science classes in Southampton? There used to be, and I suppose is, a Hartley Institute.

If you want to consult books you cannot otherwise obtain, take this to the librarian, give him my compliments, and say I should be very much obliged if he would help you.—I am, yours very faithfully,

T. H. HUXLEY.

Great was Huxley's astonishment when he learned in reply that his correspondent was a casual dock labourer, and had but scanty hours of leisure in which to read and think and seek into the recesses of nature, while his means of observation consisted of a toy microscope bought for a shilling at a fair. Casting about for some means of lending the man a helping hand, he bethought him of the Science and Art Department, and wrote on December 30 to Sir J. Donnelly:—

The Department has feelers all over England—has it any at Southampton? And if it has, could it find out something about the writer of the letters I enclose? For a "casual docker" they are remarkable; and I think when you have read them you will not mind my bothering you with them. (I really have had the grace to hesitate.)

I have been puzzled what to do for the man. It is so much easier to do harm than good by meddling—and yet I don't like to leave him to "casual docking."

In that first letter he has got—on his own hook—about as far as Buffon and Needham 150 years ago.

And later to Professor Howes :—

HODESLEA, EASTBOURNE,
Feb. 12, 1894.

MY DEAR HOWES—Best thanks for unearthing the volumes of Milne-Edwards. I was afraid my set was spoiled.

I shall be still more obliged to you if you can hear of something for S——. There is a right good parson in his neighbourhood, and from what he tells me about S—— I am confirmed in my opinion that he is a very exceptional man, who ought to be at something better than porter's work for twelve hours a day.

The mischief is that one never knows how transplanting a tree, much less a man, will answer. Playing Providence is a game at which one is very apt to burn one's fingers.

However, I am going to try, and hope at any rate to do no harm to the man I want to help.—Ever yours very faithfully,

T. H. HUXLEY.

He was eventually offered more congenial occupation at the Natural History Museum in South Kensington, but preferred not to enter into the bonds of an unaccustomed office.

Meanwhile, through Sir John Donnelly, Huxley was placed in communication with the Rev. Montague Powell, who, at his request, called upon the docker; and finding him a man who had read and thought to an astonishing extent upon scientific problems, and had a considerable acquaintance with English literature, soon took more than a vicarious interest in him. Mr. Powell, who kept Huxley informed of his talks and correspondence with G. S., gives a full account of the circumstances in a letter to the *Spectator* of July 13, 1895, from which I quote the following words :—

The Professor's object in writing was to ask me how best such a man could be helped, I being at his special request the intermediary. So I suggested in the meanwhile a microscope and a few scientific books. In the course of a few days I received a splendid achromatic compound microscope and some books, which I duly handed over to my friend, telling him it was from an unknown hand. "Ah," he said, "I know who that must be; it can be no other than the greatest of living scientists; it is just like him to help a tyro."

One small incident of this affair is perhaps worth preserving as an example of Huxley's love of a bantering repartee. In the midst of the correspondence Mr. Powell seems suddenly to have been seized by an uneasy recollection that Huxley had lately received some honour or title, so he next addressed him as "My dear Sir Thomas." The latter, not to be outdone, promptly replied with "My dear Lord Bishop of the Solent."

About the same time comes a letter to Mr. Knowles, based upon a paragraph from the gossiping column of some newspaper which had come into Huxley's hands:—

HODESLEA, EASTBOURNE,
Nov. 9, 1893.

Gossip of the Town.

"Professor Huxley receives 200 guineas for each of his articles for the *Nineteenth Century*."

MY DEAR KNOWLES—I have always been satisfied with the *Nineteenth Century* in the capacity of paymaster, but I did not know how much reason I had for my satisfaction till I read the above!

Totting up the number of articles and multiplying by 200 it strikes me I shall be behaving very handsomely if I take £2000 for the balance due.

So sit down quickly, take thy cheque-book, and write five score, and let me have it at breakfast time to-morrow. I once got a cheque for £1000 at breakfast, and it ruined me morally. I have always been looking out for another.

I hope you are all flourishing. We are the better for Maloja, but more dependent on change of weather and other trifles than could be wished. Yet I find myself outlasting those who started in life along with me. Poor Andrew Clark and I were at Haslar together in 1846, and he was the younger by a year and a half.—Ever yours very faithfully, T. H. HUXLEY.

All my time is spent in the co-ordination of my eruptions when I am an active volcano.

I hope you got the volumes which I told Macmillan to send you.

The following letter to Professor Romanes, whose failing eyesight was a premonitory symptom of the disease which proved fatal the next year, reads, so to say, as a solemn prelude to the death of three old friends this autumn—of Andrew Clark, his old comrade at Haslar, and cheery physician for many years; of Benjamin Jowett, Master of Balliol, whose acquaintance he had first made in 1851 at the Stanleys' at Harrow, and with whom he kept up an intimacy to the end of his life, visiting Balliol once or twice every year; and, heaviest blow, of John Tyndall, the friend and comrade whose genial warmth of spirit made him almost claim a brother's place in early struggles and later success, and whose sudden death was all the more poignant for the cruel touch of tragedy in the manner of it:—

HODESLEA, *Sept.* 28, 1893.

MY DEAR ROMANES—We are very much grieved to hear such a bad account of your health. Would that we could achieve something more to the purpose than assuring you and Mrs. Romanes of our hearty sympathy with you both in your troubles. I assure you, you are much in our thoughts, which are sad enough with the news of Jowett's, I fear, fatal attack.

I am almost ashamed to be well and tolerably active when young and old friends are being thus prostrated.

However, you have youth on your side, so do not give up, and wearisome as doing nothing may be, persist in it as the best of medicines.

At my time of life one should be always ready to stand at attention when the order to march comes; but for the rest I think it well to go on doing what I can, as if F. M. General Death had forgotten me. That must account for my seeming presumption in thinking I may some day "take up the threads" of late evolutionary speculation.—Ever yours very faithfully, T. H. HUXLEY.

My wife joins with me in love and kind wishes to you both.

At the request of his friends, Huxley wrote for the *Nineteenth Century* a brief appreciation of his old comrade Tyndall—the tribute of a friend to a friend—and, difficult

task though it was, touched on the closing scene, if only from a chivalrous desire to do justice to the long devotion which accident had so cruelly wronged :—

I am comforted (he writes to Sir J. Hooker on January 3) by your liking the Tyndall article. You are quite right, I shivered over the episode of the "last words," but it struck me as the best way of getting justice done to her, so I took a header. I am glad to see by the newspaper comments that it does not seem to have shocked other people's sense of decency.

The funeral took place on Saturday, December 9. There was no storm nor fog to make the graveside perilous for the survivors. In the Haslemere churchyard the winter sun shone its brightest, and the moorland air was crisp with an almost Alpine freshness as this lover of the mountains was carried to his last resting-place. But though he took no outward harm from that bright still morning, Huxley was greatly shaken by the event: "I was very much used up," he writes to Sir M. Foster on his return home two days later, "to my shame be it said, far more than my wife"; and on December 30 to Sir John Donnelly :—

Your kind letter deserved better than to have been left all this time without response, but the fact is, I came to grief the day after Christmas Day (no, we did *not* indulge in too much champagne). Lost my voice, and collapsed generally, without any particular reason, so I went to bed and stayed there as long as I could stand it, and now I am picking up again. The fact is, I suppose I had been running up a little account over poor old Tyndall. One does not stand that sort of wear and tear so well as one gets ancient.

On the same day he writes to Sir J. D. Hooker :—

HODESLEA, EASTBOURNE,
Dec. 30, 1893.

MY DEAR HOOKER—You gave the geographers some uncommonly sane advice. I observe that the words about the "stupendous ice-clad mountains" you saw were hardly out of your mouth when —— coolly asserts that the Antarctic continent is a table-land! "comparatively level country." It really is wrong that men should be allowed to go about loose who fill you with such a strong desire to kick them as that little man does.

I send herewith a spare copy of *Nineteenth* with my paper about

Tyndall. It is not exactly what I could wish, as I was hurried over it, and knocked up into the bargain, but I have tried to give a fair view of him. Tell me what you think of it.

I have been having a day or two on the sick list. Nothing discernible the matter, only flopped, as I did in the spring. However, I am picking up again. The fact is, I have never any blood pressure to spare, and a small thing humbugs the pump.

However, I have some kicks left in me, *vide* the preface to the fourth vol. of *Essays;* do. No. V. when that appears in February.

Now, my dear old friend, take care of yourself in the coming year '94. I'll stand by you as long as the fates will let me, and you must be equally "Johnnie." With our love to Lady Hooker and yourself —Ever yours affectionately, T. H. HUXLEY.

CHAPTER XXII

1894

THE completion early in 1894 of the ninth volume of *Collected Essays* was followed by a review of them in *Nature* (February 1), from the pen of Professor Ray Lankester, emphasising the way in which the writer's personality appears throughout the writing:—

> There is probably no lover of apt discourse, of keen criticism, or of scientific doctrine who will not welcome the issue of Professor Huxley's *Essays* in the present convenient shape. For my own part, I know of no writing which by its mere form, even apart from the supreme interest of the matters with which it mostly deals, gives me so much pleasure as that of the author of these essays. In his case, more than that of his contemporaries, it is strictly true that the style is the man. Some authors we may admire for the consummate skill with which they transfer to the reader their thought without allowing him, even for a moment, to be conscious of their personality. In Professor Huxley's work, on the other hand, we never miss his fascinating presence; now he is gravely shaking his head, now compressing the lips with emphasis, and from time to time, with a quiet twinkle of the eye, making unexpected apologies or protesting that he is of a modest and peace-loving nature. At the same time, one becomes accustomed to a rare and delightful phenomenon. Everything which has entered the author's brain by eye or ear, whether of recondite philosophy, biological fact, or political programme, comes out again to us—clarified, sifted, arranged, and vivified by its passage through the logical machine of his strong individuality.

Of the artist in him it continues:—

> He deals with form not only as a mechanical engineer *in partibus* (Huxley's own description of himself), but also as an artist, a born lover of form, a character which others recognise in him though he does not himself set it down in his analysis.

The essay on "Animal Automatism" suggested a reminiscence of Professor Lankester's as to the way in which it was delivered, and this in turn led to Huxley's own account of the incident in the letter given in Vol. I. p. 413.

About the same time there is a letter acknowledging Mr. Bateson's book *On Variation*, which is interesting as touching on the latter-day habit of speculation apart from fact which had begun to prevail in biology :—

HODESLEA, *Feb.* 20, 1894.

MY DEAR MR. BATESON—I have put off thanking you for the volume *On Variation* which you have been so good as to send me in the hope that I should be able to look into it before doing so.

But as I find that impossible, beyond a hasty glance, at present, I must content myself with saying how glad I am to see from that glance that we are getting back from the region of speculation into that of fact again.

There have been threatenings of late that the field of battle of Evolution was being transferred to Nephelococcygia.

I see you are inclined to advocate the possibility of considerable "saltus" on the part of Dame Nature in her variations. I always took the same view, much to Mr. Darwin's disgust, and we used often to debate it.

If you should come across my article in the *Westminster* (1860) you will find a paragraph on that question near the end. I am writing to Macmillan to send you the volume.—Yours very faithfully, T. H. HUXLEY.

By the way, have you ever considered this point, that the variations of which breeders avail themselves are exactly those which occur when the previously wild stocks are subjected to exactly the same conditions?

The rest of the first half of the year is not eventful. As illustrating the sort of communications which constantly came to him, I quote from a letter to Sir J. Donnelly, of January 11 :—

I had a letter from a fellow yesterday morning who must be a a lunatic, to the effect that he had been reading my essays, thought I was just the man to spend a month with, and was coming down by the five o'clock train, attended by his seven children and his *mother-in-law!*

Frost being over, there was lots of boiling water ready for him, but he did not turn up!

Wife and servants expected nothing less than assassination.

Later he notes with dismay an invitation as a Privy Councillor to a State evening party :—

It is at 10.30 P.M., just the time this poor old septuagenarian goes to bed !

My swellness is an awful burden, for as it is I am going to dine with the Prime Minister on Saturday.

The banquet with the Prime Minister here alluded to was the occasion of a brief note of apology to Lord Rosebery for having unintentionally kept him waiting :—

HODESLEA, EASTBOURNE,
May 28, 1894.

DEAR LORD ROSEBERY—I had hoped that my difficulties in dealing with an overtight scabbard stud, as we sat down to dinner on Saturday, had inconvenienced no one but myself, until it flashed across my mind after I had parted from you that, as you had observed them, it was only too probable that I had the misfortune to keep you waiting.

I have been in a state of permanent blush ever since, and I feel sure you will forgive me for troubling you with this apology as the only remedy to which I can look for relief from that unwonted affliction.—I am, dear Lord Rosebery, yours very faithfully,

T. H. HUXLEY.

All through the spring he had been busy completing the chapter on Sir Richard Owen's work, which he had been asked to write by the biographer of his old opponent, and on February 4 tells Sir J. D. Hooker :—

I am toiling over my chapter about Owen, and I believe his ghost in Hades is grinning over my difficulties.

The thing that strikes me most is, how he and I and all the things we fought about belong to antiquity.

It is almost impertinent to trouble the modern world with such antiquarian business.

He sent the MS. to Sir M. Foster on June 16; the book itself appeared in December. The chapter in question was restricted to a review of the immense amount of work, most valuable on its positive side, done by Owen (compare the letter of January 16, 1893); and the review in *Nature* remarks of it that the criticism is "so straightforward,

searching, and honest as to leave nothing further to be desired."

Besides this piece of work, he had written early in the year a few lines on the general character of the nineteenth century, in reply to a request, addressed to "the most illustrious children of the century," for their opinion as to what name will be given to it by an impartial posterity—the century of Comte, of Darwin or Renan, of Edison, Pasteur, or Gladstone. He replied :—

I conceive that the leading characteristic of the nineteenth century has been the rapid growth of the scientific spirit, the consequent application of scientific methods of investigation to all the problems with which the human mind is occupied, and the correlative rejection of traditional beliefs which have proved their incompetence to bear such investigation.

The activity of the scientific spirit has been manifested in every region of speculation and of practice.

Many of the eminent men you mention have been its effective organs in their several departments.

But the selection of any one of these, whatever his merits, as an adequate representative of the power and majesty of the scientific spirit of the age would be a grievous mistake.

Science reckons many prophets, but there is not even a promise of a Messiah.

The unexampled increase in the expenditure of the European states upon their armaments led the Arbitration Alliance this year to issue a memorial urging the Government to co-operate with other Governments in reducing naval and military burdens. Huxley was asked to sign this memorial, and replied to the secretary as follows :—

HODESLEA, EASTBOURNE,
June 21, 1894.

DEAR SIR—I have taken some time to consider the memorial to which you have called my attention, and I regret that I do not find myself able to sign it.

Not that I have the slightest doubt about the magnitude of the evils which accrue from the steady increase of European armaments; but because I think that this regrettable fact is merely the superficial expression of social forces, the operation of which cannot be sensibly affected by agreements between Governments.

In my opinion it is a delusion to attribute the growth of arma-

ments to the "exactions of militarism." The "exactions of industrialism," generated by international commercial competition, may, I believe, claim a much larger share in prompting that growth. Add to this the French thirst for revenge, the most just determination of the German and Italian peoples to assert their national unity; the Russian Panslavonic fanaticism and desire for free access to the western seas; the Papacy steadily fishing in the troubled waters for the means of recovering its lost (I hope for ever lost) temporal possessions and spiritual supremacy; the "sick man," kept alive only because each of his doctors is afraid of the other becoming his heir.

When I think of the intensity of the perturbing agencies which arise out of these and other conditions of modern European society, I confess that the attempt to counteract them by asking Governments to agree to a maximum military expenditure, does not appear to me to be worth making; indeed I think it might do harm by leading people to suppose that the desires of Governments are the chief agents in determining whether peace or war shall obtain in Europe.—I am, yours faithfully, T. H. HUXLEY.

Later in the year, on August 8, took place the meeting of the British Association at Oxford, noteworthy for the presidential address delivered by Lord Salisbury, Chancellor of the University, in which the doctrine of evolution was "enunciated as a matter of course—disputed by no reasonable man," although accompanied by a description of the working of the natural selection and variation which appeared to the man of science a mere travesty of these doctrines.

Huxley had been persuaded to attend this meeting, the more willingly, perhaps, since his reception at Oxford the year before suggested that there would be a special piquancy in the contrast between this and the last meeting of the Association at Oxford in 1860. He was not disappointed. Details apart, the cardinal situation was reversed. The genius of the place had indeed altered. The representatives of the party, whose prophet had once contemptuously come here to anathematise the "Origin," returned at length to the same spot to admit—if not altogether ungrudgingly—the greatness of the work accomplished by Darwin.

Once under promise to go, he could not escape without the "few words" which he now found so tiring; but he took the part which assured him greatest freedom, as seconder of the vote of thanks to the president for his address. The

study of an advance copy of the address raised an "almost overwhelming temptation" to criticise certain statements contained in it; but this would have been out of place in seconding a vote of thanks; and resisting the temptation, he only "conveyed criticism," as he writes to Professor Lewis Campbell, "in the form of praise": going so far as to suggest "it might be that, in listening to the deeply interesting address of the President, a thought had occasionally entered his mind how rich and profitable might be the discussion of that paper in Section D" (Biology). It was not exactly an off-hand speech. Writing to Sir M. Foster for any good report which might appear in an Oxford paper, he says:—

> I have no notes of it. I wrote something on Tuesday night, but this draft is no good, as it was metamorphosed two or three times over on Wednesday.

One who was present and aware of the whole situation once described how he marked the eyes of another interested member of the audience, who knew that Huxley was to speak, but not what he meant to say, turning anxiously whenever the president reached a critical phrase in the address, to see how he would take it. But the expression of his face told nothing; only those who knew him well could infer a suppressed impatience from a little twitching of his foot.

Of this occasion Professor Henry F. Osborn, one of his old pupils, writes in his "Memorial Tribute to Thomas H. Huxley" (*Transactions of the N.Y. Acad. Soc.* vol. xv.):—

> Huxley's last public appearance was at the meeting of the British Association at Oxford. He had been very urgently invited to attend, for, exactly a quarter of a century before, the Association had met at Oxford, and Huxley had had his famous encounter with Bishop Wilberforce. It was felt that the anniversary would be an historic one, and incomplete without his presence, and so it proved to be. Huxley's especial duty was to second the vote of thanks for the Marquis of Salisbury's address—one of the invariable formalities of the opening meetings of the Association. The meeting proved to be the greatest one in the history of the Association. The Sheldonian Theatre was packed with one of the most distinguished scientific audiences ever brought together, and the address of the Marquis was worthy of the occasion. The whole tenor of it was

unknown in science. Passing from the unsolved problems of astronomy, chemistry, and physics, he came to biology. With delicate irony he spoke of the "*comforting word, evolution*," and passing to the Weismannian controversy, implied that the diametrically opposed views so frequently expressed nowadays threw the whole process of evolution into doubt. It was only too evident that the Marquis himself found no comfort in evolution, and even entertained a suspicion as to its probability. It was well worth the whole journey to Oxford to watch Huxley during this portion of the address. In his red doctor-of-laws gown, placed upon his shoulders by the very body of men who had once referred to him as "a Mr. Huxley," he sank deeper into his chair upon the very front of the platform and restlessly tapped his foot. His situation was an unenviable one. He had to thank an ex-Prime Minister of England and present Chancellor of Oxford University for an address, the sentiments of which were directly against those he himself had been maintaining for twenty-five years. He said afterwards that when the proofs of of the Marquis's address were put into his hands the day before, he realised that he had before him a most delicate and difficult task. Lord Kelvin (Sir William Thomson) one of the most distinguished living physicists, first moved the vote of thanks, but his reception was nothing to the tremendous applause which greeted Huxley in the heart of that University whose cardinal principles he had so long been opposing. Considerable anxiety had been felt by his friends lest his voice should fail to fill the theatre, for it had signally failed during his Romanes Lecture delivered in Oxford the year before, but when Huxley arose he reminded you of a venerable gladiator returning to the arena after years of absence. He raised his figure and his voice to its full height, and, with one foot turned over the edge of the step, veiled an unmistakable and vigorous protest in the most gracious and dignified speech of thanks.

Throughout the subsequent special sessions of this meeting Huxley could not appear. He gave the impression of being aged but not infirm, and no one realised that he had spoken his last word as champion of the law of evolution.

Such criticism of the address as he actually expressed reappears in the leading article, "Past and Present," which he wrote for *Nature* to celebrate the twenty-fifth anniversary of its foundation (Nov. 1, 1894).

The essence of the criticism is that with whatever demonstrations of hostility to parts of the Darwinian theory Lord Salisbury covered the retreat of his party from their ancient positions, he admitted the validity of the main points for which Darwin contended.

The essence of this great work (the *Origin of Species*) may be stated summarily this: it affirms the mutability of species and the descent of living forms, separated by differences of more than varietal value, from one stock. That is to say, it propounds the doctrine of evolution as far as biology is concerned. So far, we have merely a re-statement of a doctrine which, in its most general form, is as old as scientific speculation. So far, we have the two theses which were declared to be scientifically absurd and theologically damnable by the Bishop of Oxford in 1860.

It is also of these two fundamental doctrines that, at the meeting of the British Association in 1894, the Chancellor of the University of Oxford spoke as follows:—

"Another lasting and unquestioned effect has resulted from Darwin's work. He has, as a matter of fact, disposed of the doctrine of the immutability of species. . . ."

"Few now are found to doubt that animals separated by differences far exceeding those that distinguished what we know as species have yet descended from common ancestors."

Undoubtedly, every one conversant with the state of biological science is aware that general opinion has long had good reason for making the *volte face* thus indicated. It is also mere justice to Darwin to say that this "lasting and unquestioned" revolution is, in a very real sense, his work. And yet it is also true that, if all the conceptions promulgated in the *Origin of Species* which are peculiarly Darwinian were swept away, the theory of the evolution of animals and plants would not be in the slightest degree shaken.

The strain of this single effort was considerable; "I am frightfully tired," he wrote on August 11, "but the game was worth the candle."

Letters to Sir J. D. Hooker and to Professor Lewis Campbell contain his own account of the affair. The reference in the latter to the priests is in reply to Professor Campbell's story of one of Jowett's last sayings. They had been talking of the collective power of the priesthood to resist the introduction of new ideas; a long pause ensued, and the old man seemed to have slipped off into a doze, when he suddenly broke the silence by saying, "The priests will always be too many for you."

THE SPA, TUNBRIDGE WELLS,
Aug. 12, 1894.

MY DEAR HOOKER—I wish, as everybody wished, you had been with us on Wednesday evening at Oxford when we settled accounts

for 1860, and got a receipt in full from the Chancellor of the University, President of the Association, and representative of ecclesiastical conservatism and orthodoxy.

I was officially asked to second the vote of thanks for the address, and got a copy of it the night before—luckily—for it was a kittle business. . . .

It was very queer to sit there and hear the doctrines you and I were damned for advocating thirty-four years ago at Oxford, enunciated as matters of course—disputed by no reasonable man!—in the Sheldonian Theatre by the Chancellor. . . .

Of course there is not much left of me, and it will take a fortnight's quiet at Eastbourne (whither we return on Tuesday next) to get right. But it was a pleasant last flare-up in the socket!

With our love to you both—Ever yours affectionately,

T. H. HUXLEY.

HODESLEA, *Aug.* 18, 1894.

MY DEAR CAMPBELL—I am setting you a good example. You and I are really too old friends to go on wasting ink in honorary prefixes.

I had a very difficult task at Oxford. The old Adam, of course, prompted the tearing of the address to pieces, which would have been a very easy job, especially the latter half of it. But as that procedure would not have harmonised well with the function of a seconder of a vote of thanks, and as, moreover, Lord S. was very just and good in his expressions about Darwin, I had to convey criticism in the shape of praise.

It was very curious to me to sit there and hear the Chancellor of the University accept, as a matter of course, the doctrines for which the Bishop of Oxford coarsely anathematised us thirty-four years earlier. *E pur si muove!*

I am not afraid of the priests in the long-run. Scientific method is the white ant which will slowly but surely destroy their fortifications. And the importance of scientific method in modern practical life—always growing and increasing—is the guarantee for the gradual emancipation of the ignorant upper and lower classes, the former of whom especially are the strength of the priests.

My wife had a very bad attack of her old enemy some weeks ago, and she thought she would not be able to go to Oxford. However, she picked up in the wonderfully elastic way she has, and I believe was less done-up than I when we left on the Friday morning. I was glad the wife was there, as the meeting gave me a very kind reception, and it was probably the last flare-up in the socket.

The Warden of Merton took great care of us, but it was sad to think of the vacuity of Balliol.

Please remember me very kindly to Father Steffens and the Steeles, and will you tell Herr Walther we are only waiting for a balloon to visit the hotel again?

With our affectionate regards to Mrs. Campbell and yourself—Ever yours very faithfully, T. H. HUXLEY.

Here also belong several letters of miscellaneous interest. One is to Mrs. Lewis Campbell at the Maloja :—

HODESLEA, *Aug.* 20, 1894.

MY DEAR MRS. CAMPBELL—What a pity I am not a telepath! I might have answered your inquiry in the letter I was writing to your husband yesterday.

The flower I found on the island in Sils Lake was a cross between *Gentiana lutea* and *Gentiana punctata*—nothing new, but interesting in many ways as a natural hybrid.

As to baptising the island, I am not guilty of usurping ecclesiastical functions to that extent. I have a notion that the island has a name already, but I cannot recollect it. Walther would know.

My wife had a bad attack, and we were obliged to give up some visits we had projected. But she got well enough to go to Oxford with me for a couple of days, and really stood the racket better than I did.

At present she is fairly well, and I hope the enemy may give her a long respite. The Colliers come to us at the end of this month, and that will do her good.

With our affectionate regards to you both and remembrances to our friends—Ever yours very truly, T. H. H.

The first of the following set refers to a lively piece of nonsense which Huxley wrote just before going to stay with the Romanes' at Oxford on the occasion of the Romanes Lecture.[1] After Professor Romanes' death, Mrs. Romanes asked leave to print it in the biography of her husband. In the other letters, Huxley gives his consent, but, with his usual care for the less experienced, tried to prevent any malicious perversion of the fun which might put her in a false position.

TO MRS. ROMANES

HODESLEA, *Sept.* 20, 1894.

I do not think I can possibly have any objection to your using my letter if you think it worth while—but perhaps you had better

[1] See p. 351.

let me look at it, for I remember nothing about it—and my letters to people whom I trust are sometimes more plain-spoken than polite about things and men. You know at first there was some talk of my possibly supplying Gladstone's place in case of his failure, and I would not be sure of my politeness in that quarter!

Pray do not suppose that your former letter was other than deeply interesting and touching to me. I had more than half a mind to reply to it, but hesitated with a man's horror of touching a wound he cannot heal.

And then I got a bad bout of "liver," from which I am just picking up.

HODESLEA, *Sept.* 22, 1894.

It's rather a rollicking epistle, I must say, but as my wife (who sends her love) says she thinks she is the only person who has a right to complain (and she does not), I do not know why it should not be published.

P.S.—I fancy very few people will catch the allusion about not contradicting me. But perhaps it would be better to take the opinion of some impartial judge on that point.

I do not care the least on my own account, but I see my words might be twisted into meaning that you had told me something about your previous guest, and that I referred to what you had said.

Of course you had done nothing of the kind, but as a wary old fox, experienced sufferer from the dodges of the misrepresenter, I feel bound not to let you get into any trouble if I can help it.

A regular lady's *P.S.* this.

P.S.—Letter returned herewith.

TO MR. LESLIE STEPHEN

HODESLEA, *Oct.* 16, 1894.

MY DEAR STEPHEN—I am very glad you like to have my *omnium gatherum*, and think the better of it for gaining me such a pleasant letter of acknowledgment.

It is a great loss to me to be cut off from all my old friends, but sticking closely to my hermitage, with fresh air and immense quantities of rest, have become the conditions of existence for me, and one must put up with them.

I have not paid all the debt incurred in my Oxford escapade yet—the last "little bill" being a sharp attack of lumbago, out of which I hope I have now emerged. But my deafness alone should bar me from decent society. I have not the moral courage to avoid

making shots at what people say, so as not to bore them; and the results are sometimes disastrous.

I don't see there is any real difference between us. You are charitable enough to overlook the general immorality of the cosmos on the score of its having begotten morality in one small part of its domain.—Ever yours very faithfully, T. H. HUXLEY.

TO MR. G—— S——[1]

HODESLEA, *Oct.* 31, 1894.

DEAR MR. S—— "Liver," "lumbago," and other small ills the flesh is heir to, have been making me very lazy lately, especially about letter-writing.

You have got into the depths where the comprehensible ends in the incomprehensible—where the symbols which may be used with confidence so far begin to get shaky.

It does not seem to me absolutely necessary that matter should be composed of solid particles. The "atoms" may be persistent whirlpools of a continuous "substance"—which substance, if at rest, could not affect us (all sensory impression being dependent on motion) and consequently would *for us* = 0. The evolution of matter would be the getting under weigh of this "nothing for us" until it became the "something for us," the different motions of which give us the mental states we call the qualities of things.

But it needs a very steady head to walk safely among these abysses of thought, and the only use of letting the mind range among them is as a corrective to the hasty dogmatism of the so-called materialists, who talk just as glibly of that of which they know nothing as the most bigoted of the orthodox.

Here also stand two letters to Lord Farrer, one before, the other after, his address at the Statistical Society on the Relations between Morals, Economics and Statistics, which touch on several philosophical and social questions, always, to his mind, intimately connected, and wherein wrong modes of thought indubitably lead to wrong modes of action. Noteworthy is a defence of the fundamental method of Political Economy, however much its limitations might be forgotten by some of its exponents. The reference to the Church agitation to introduce dogmatic teaching into the elementary schools has also a lasting interest.

[1] See p. 365.

HODESLEA, *Nov.* 6, 1894.

MY DEAR FARRER—Whenever you get over the optimism of your youthful constitution (I wish I were endowed with that blessing) you will see that the Gospels and I are right about the Devil being "Prince" (note the distinction—not "king") of the Cosmos.

The *a priori* road to scientific, political, and all other doctrine is H.R.H. Satan's invention—it is the intellectual, broad, and easy path which leadeth to Jehannum.

The King's road is the strait path of painful observation and experiment, and few they be that enter thereon.

R. G. Latham, queerest of men, had singular flashes of insight now and then. Forty years ago he gravely told me that the existence of the Established Church was to his mind one of the best evidences of the recency of the evolution of the human type from the simian.

How much there is to confirm this view in present public opinion and the intellectual character of those who influence it!

It explains all your difficulties at once, and I regret that I do not seem to have mentioned it at any of those mid-day symposia which were so pleasant when you and I were younger.—Ever yours very faithfully, T. H. HUXLEY.

P.S.—*Apropos* of Athelstan Riley and his friends—I feel rather obliged to them. I assented to the compromise (1) because I felt that English opinion would not let us have the education of the masses at any cheaper price; (2) because, with the Bible in lay hands, I was satisfied that the teaching from it would gradually become modified into harmony with common sense.

I do not doubt that this is exactly what has happened, and is the ground of the alarm of the orthodox.

But I do not repent of the compromise in the least. Twenty years of reasonably good primary education is "worth a mass."

Moreover the Diggleites stand to lose anyhow, and they will lose most completely and finally if they win at the elections this month. So I am rather inclined to hope they may.

HODESLEA, STAVELEY ROAD, EASTBOURNE,
Nov. 3, 1894.

MY DEAR MR. CLODD—They say that the first thing an Englishman does when he is hard up for money is to abstain from buying books. The first thing I do when I am liver-y, lumbagy, and generally short of energy, is to abstain from answering letters. And I am only just emerging from a good many weeks of that sort of flabbiness and poverty.

Many thanks for your notice of Kidd's book. Some vile

punsters called it an attempt to put a Kid glove on the iron hand of Nature. I thought it (I mean the book, not the pun) clever from a literary point of view, and worthless from any other. You will see that I have been giving Lord Salisbury a Roland for his Oliver in *Nature*. But, as hinted, if we only had been in Section D!

With my wife's and my kind regards and remembrances—Ever yours very truly, T. H. HUXLEY.

ATHENÆUM CLUB, *Dec.* 19, 1894.

MY DEAR FARRER—I am indebted to you for giving the recording angel less trouble than he might otherwise have had, on account of the worse than usual unpunctuality of the London and Brighton this morning. For I have utilised the extra time in reading and thinking over your very interesting address.

Thanks for your protest against the mischievous *a priori* method, which people will not understand is as gross an anachronism in social matters as it would be in Hydrostatics. The so-called "Sociology" is honeycombed with it, and it is hard to say who are worse, the individualists or the collectivists. But in your just wrath don't forget that there is such a thing as a science of social life, for which, if the term had not been so hopelessly degraded, Politics is the proper name.

Men are beings of a certain constitution, who, under certain conditions, will as surely tend to act in certain ways as stones will tend to fall if you leave them unsupported. The laws of their nature are as invariable as the laws of gravitation, only the applications to particular cases offer worse problems than the case of the three bodies.

The Political Economists have gone the right way to work—the way that the physical philosopher follows in all complex affairs—by tracing out the effects of one great cause of human action, the desire of wealth, supposing it to be unchecked.

If they, or other people, have forgotten that there are other potent causes of action which may interfere with this, it is no fault of scientific method but only their own stupidity.

Hydrostatics is not a "dismal science," because water does not always seek the lowest level—*e.g.* from a bottle turned upside down, if there is a cork in the neck!

There is much need that somebody should do for what is vaguely called "Ethics" just what the Political Economists have done. Settle the question of what will be done under the unchecked action of certain motives, and leave the problem of "ought" for subsequent consideration.

For, whatever they ought to do, it is quite certain the majority

of men will act as if the attainment of certain positive and negative pleasures were the end of action.

We want a science of "Eubiotics" to tell us exactly what will happen if human beings are exclusively actuated by the desire of well-being in the ordinary sense. Of course the utilitarians have laid the foundations of such a science, with the result that the nicknamer of genius called this branch of science "pig philosophy," making just the same blunder as when he called political economy "dismal science."

"Moderate well-being" may be no more the worthiest end of life than wealth. But if it is the best to be had in this queer world —it may be worth trying for.

But you will begin to wish the train had been *punctual!*

Draw comfort from the fact that if error is always with us, it is, at any rate, remediable. I am more hopeful than when I was young. Perhaps life (like matrimony, as some say) should begin with a little aversion!—Ever yours very faithfully,

T. H. HUXLEY.

Some years before this, a fund for a "Darwin Medal" had been established in memory of the great naturalist, the medal to be awarded biennially for researches in biology. With singular appropriateness, the first award was made to Dr. A. R. Wallace, the joint propounder of the theory of Natural Selection, whose paper, entrusted to Darwin's literary sponsorship, caused the speedy publication of Darwin's own long-continued researches and speculations. The second, with equal appropriateness, was to Sir J. D. Hooker, both as a leader in science and a helper and adviser of Darwin.

Huxley's own view of such scientific honours as medals and diplomas was that they should be employed to stimulate for the future rather than to reward for the past; and delighted as he was at the poetic justice of these two awards, this justice once satisfied, he let his opinion be known that thenceforward the Darwin Medal ought to be given only to younger men. But when this year he found the Darwin Medal awarded to himself "for his researches in biology and his long association with Charles Darwin," he could not but be touched and gratified by this mark of appreciation from his fellow-workers in science, this association in one more scientific record with old allies and true friends—to "have

his niche in the Pantheon" next to Hooker and near to Darwin.

It was a rare instance of the fitness of things that the three men who had done most to develop and to defend Darwin's ideas should live to stand first in the list of the Darwin medallists; and Huxley felt this to be a natural closing of a chapter in his life, a fitting occasion on which to bid farewell to public life in the world of science. Almost at the same moment another chapter in science reached its completion in the "coming of age" of *Nature*, a journal which, when scientific interests at large had grown stronger, had succeeded in realising his own earlier efforts to found a scientific organ, and with which he had always been closely associated.

As mentioned above, he wrote for the November number an introductory article called "Past and Present," comparing the state of scientific thought of the day with that of twenty-five years before, when the journal was first started. To celebrate the occasion, a dinner was to be held this same month of all who had been associated with *Nature*, and this Huxley meant to attend, as well as the more important anniversary dinner of the Royal Society on St. Andrew's Day.

I have promised (he writes on November 6 to Sir M. Foster) to go to the *Nature* dinner if I possibly can. Indeed I should be sorry to be away. As to the R.S. nothing short of being confined to bed will stop me. And I shall be good for a few words after dinner.

Thereafter I hope not to appear again on any stage.

His letter about the medal expresses his feelings as to the award.

HODESLEA, *Nov.* 2, 1894.

MY DEAR FOSTER—Didn't I tell the P.R.S., Secretaries, Treasurer, and all the Fellows thereof, when I spake about Hooker years ago, that thenceforth the Darwin Medal was to be given to the young, and not to useless old extinct volcanoes? I ought to be very angry with you all for coolly ignoring my wise counsels.

But whether it is vanity or something a good deal better, I am not. One gets chill old age, and it is very pleasant to be warmed up unexpectedly even against one's injunctions. Moreover, my

wife is very pleased, not to say jubilant; and if I were made Archbishop of Canterbury I should not be able to convince her that my services to Theology were hardly of the sort to be rewarded in that fashion.

I need not say what I think about your action in the matter, my faithful old friend. With our love to you both—Ever yours,

T. H. HUXLEY.

I suppose you are all right again, as you write from the R.S. Liver permitting I shall attend meeting and dinner. It is very odd that the Medal should come along with my pronouncement in *Nature*, which I hope you like. I cut out rather a stinging paragraph at the end.

HODESLEA, EASTBOURNE,
Nov. 11, 1894.

MY DEAR DONNELLY—Why on earth did I not answer your letter before? Echo (being Irish) says, "Because of your infernal bad habit of putting off; which is growing upon you, you wretched old man."

Of course I shall be very glad if anything can be done for S——. Howes has written to me about him since your letter arrived—and I am positively going to answer his epistle. It's Sunday morning, and I feel good.

You will have seen that the R.S. has been giving me the Darwin Medal, though I gave as broad a hint as was proper the last time I spoke at the Anniversary, that it ought to go to the young men. Nevertheless, with the ordinary inconsistency of the so-called "rational animal," I am well pleased.

I hope you will be at the dinner, and would ask you to be my guest—but as I thought my boys and boys-in-law would like to be there, I have already exceeded my lawful powers of invitation and had to get a dispensation from Michael Foster.

I suppose I shall be like a horse that "stands at livery" for some time after—but it is positively my last appearance on any stage.

We were very glad to hear from Lady Donnelly that you had had a good and effectual holiday. With our love—Ever yours,

T. H. HUXLEY.

I return Howes' letter in case you want it. I see I need not write to him again after all. Three cheers!

Please give Lady Donnelly this. A number of estimable members of her sex have flown at me for writing what I thought was a highly complimentary letter. But *she* will be just, I know.

"The best of women are apt to be a little weak in the great practical arts of give-and-take, and putting up with a beating, and

a little too strong in their belief in the efficacy of government. Men learn about these things in the ordinary course of their business; women have no chance in home life, and the boards and councils will be capital schools for them. Again, in the public interest it will be well; women are more naturally economical than men, and have none of our false shame about looking after pence. Moreover, they don't job for any but their lovers, husbands, and children, so that we know the worst."

The speech at the Royal Society Anniversary dinner—which he evidently enjoyed making—was a fine piece of speaking, and quite carried away the audience, whether in the gentle depreciation of his services to science, or in his profession of faith in the methods of science and the final triumph of the doctrine of evolution, whatever theories of its operation might be adopted or discarded in the course of further investigation.

I quote from the *Times* report of the speech:—

But the most difficult task that remains is that which concerns myself. It is 43 years ago this day since the Royal Society did me the honour to award me a Royal medal, and thereby determined my career. But, having long retired into the position of a veteran, I confess that I was extremely astonished—I honestly also say that I was extremely pleased to receive the announcement that you had been good enough to award to me the Darwin Medal. But you know the Royal Society, like all things in this world, is subject to criticism. I confess that with the ingrained instincts of an old official that which arose in my mind after the reception of the information that I had been thus distinguished was to start an inquiry which I suppose suggests itself to every old official—How can my Government be justified? In reflecting upon what had been my own share in what are now very largely ancient transactions, it was perfectly obvious to me that I had no such claims as those of Mr. Wallace. It was perfectly clear to me that I had no such claims as those of my life-long friend Sir Joseph Hooker, who for 25 years placed all his great sources of knowledge, his sagacity, his industry, at the disposition of his friend Darwin. And really, I begin to despair of what possible answer could be given to the critics whom the Royal Society, meeting as it does on November 30, has lately been very apt to hear about on December 1. Naturally there occurred to my mind that famous and comfortable line, which I suppose has helped so many people under like circumstances, "They also serve who only stand and wait." I am bound to confess that the standing

and waiting, so far as I am concerned, to which I refer, has been of a somewhat peculiar character. I can only explain it, if you will permit me to narrate a story which came to me in my old nautical days, and which, I believe, has just as much foundation as a good deal of other information which I derived at the same period from the same source. There was a merchant ship in which a member of the Society of Friends had taken passage, and that ship was attacked by a pirate, and the captain thereupon put into the hands of the member of the Society of Friends a pike, and desired him to take part in the subsequent action, to which, as you may imagine, the reply was that he would do nothing of the kind; but he said that he had no objection to stand and wait at the gangway. He did stand and wait with the pike in his hands, and when the pirates mounted and showed themselves coming on board he thrust his pike with the sharp end forward into the persons who were mounting, and he said, "Friend, keep on board thine own ship." It is in that sense that I venture to interpret the principle of standing and waiting to which I have referred. I was convinced as firmly as I have ever been convinced of anything in my life, that the *Origin of Species* was a ship laden with a cargo of rich value, and which, if she were permitted to pursue her course, would reach a veritable scientific Golconda, and I thought it my duty, however naturally averse I might be to fighting, to bid those who would disturb her beneficent operations to keep on board their own ship. If it has pleased the Royal Society to recognise such poor services as I may have rendered in that capacity, I am very glad, because I am as much convinced now as I was 34 years ago that the theory propounded by Mr. Darwin—I mean that which he propounded, not that which has been reported to be his by too many ill-instructed, both friends and foes—has never yet been shown to be inconsistent with any positive observations, and if I may use a phrase which I know has been objected to, and which I use in a totally different sense from that in which it was first proposed by its first propounder, I do believe that on all grounds of pure science it "holds the field," as the only hypothesis at present before us which has a sound scientific foundation. It is quite possible that you will apply to me the remark that has often been applied to persons in such a position as mine, that we are apt to exaggerate the importance of that to which our lives have been more or less devoted. But I am sincerely of opinion that the views which were propounded by Mr. Darwin 34 years ago may be understood hereafter as constituting an epoch in the intellectual history of the human race. They will modify the whole system of our thought and opinion, our most intimate convictions. But I do not know, I do not think anybody knows, whether the particular views which he held will be hereafter fortified by the experience of the ages which come after

us; but of this thing I am perfectly certain, that the present course of things has resulted from the feeling of the smaller men who have followed him that they are incompetent to bend the bow of Ulysses, and in consequence many of them are seeking their salvation in mere speculation. Those who wish to attain to some clear and definite solution of the great problems which Mr. Darwin was the first person to set before us in later times must base themselves upon the facts which are stated in his great work, and, still more, must pursue their inquiries by the methods of which he was so brilliant an exemplar throughout the whole of his life. You must have his sagacity, his untiring search after the knowledge of fact, his readiness always to give up a preconceived opinion to that which was demonstrably true, before you can hope to carry his doctrines to their ultimate issue; and whether the particular form in which he has put them before us may be such as is finally destined to survive or not is more, I venture to think, than anybody is capable at this present moment of saying. But this one thing is perfectly certain—that it is only by pursuing his methods, by that wonderful single-mindedness, devotion to truth, readiness to sacrifice all things for the advance of definite knowledge, that we can hope to come any nearer than we are at present to the truths which he struggled to attain.

To Sir J. D. Hooker

RODESLEA, EASTBOURNE,
Dec. 4, 1894.

My dear old Man—See the respect I have for your six years seniority! I wished you had been at the dinner, but was glad you were not. Especially as next morning there was a beastly fog, out of which I bolted home as fast as possible.

I shall have to give up these escapades. They knock me up for a week afterwards. And really it is a pity, just as I have got over my horror of public speaking, and find it very amusing. But I suppose I should gravitate into a bore as old fellows do, and so it is as well I am kept out of temptation.

I will try to remember what I said at the *Nature* dinner.[1] I scolded the young fellows pretty sharply for their slovenly writing.

There will be a tenth vol. of Essays some day, and an Index rerum. Do you remember how you scolded me for being too speculative in my maiden lecture on Animal Individuality forty odd years ago? "On revient toujours," or, to put it another way, "The dog returns to his etc. etc."

So I am deep in philosophy, grovelling through Diogenes

[1] A brief report of this speech is to be found in the *British Medical Journal* for December 8, 1894, p. 1262.

Laertius—Plutarch's *Placita* and sich—and often wondering whether the schoolmasters have any better ground for maintaining that Greek is a finer language than English than the fact that they can't write the latter dialect.

So far as I can see, my faculties are as good (including memory for anything that is not useful) as they were fifty years ago, but I can't work long hours, or live out of fresh air. Three days of London bowls me over.

I expect you are in much the same case. But you seem to be able to stoop over specimens in a way impossible to me. It is that incapacity has made me give up dissection and microscopic work. I do a lot on my back, and I can tell you that the latter posture is an immense economy of strength. Indeed, when my head was troublesome, I used to spend my time either in active outdoor exercise or horizontally.

The Stracheys were here the other day, and it was a great pleasure to us to see them. I think he has had a very close shave with that accident. There is nobody whom I should more delight to honour—a right good man all round—but I am not competent to judge of his work. You are, and I do not see why you should not suggest it. I would give him a medal for being R. Strachey, but probably the Council would make difficulties.

By the way, do you see the *Times* has practically climbed down about the R.S.—came down backwards like a bear, growling all the time? I don't think we shall have any more first of December criticisms.

Lord help you through all this screed. With our love to you both—Ever yours affectionately, T. H. HUXLEY.

Abram, Abraham became
By will divine;
Let pickled Brian's name
Be changed to Brine![1]
Poetae Minores.

Poor Brian.—Brutal jest!

The following was written to a friend who had alluded to his painful recollection of a former occasion when he was Huxley's guest at the anniversary dinner of the Royal Society, and was hastily summoned from it to find his wife dying.

I fully understand your feeling about the R.S. Dinner. I have not forgotten the occasion when you were my guest: still less my brief sight of you when I called the next day.

[1] Sir Joseph's son, Brian, had fallen into a pan of brine.

These things are the "lachrymae rerum"—the abysmal griefs hidden under the current of daily life, and seemingly forgotten, till now and then they come up to the surface—a flash of agony—like the fish that jumps in a calm pool.

One has one's groan and goes to work again

If I knew of anything else for it, I would tell you; but all my experience ends in the questionable thanksgiving, "It's lucky it's no worse."

With which bit of practical philosophy, and our love, believe me, ever yours affectionately, T. H. HUXLEY.

Before speaking of his last piece of work, in the vain endeavour to complete which, he exposed himself to his old enemy, influenza, I shall give several letters of miscellaneous interest.

The first is in reply to Lord Farrer's inquiry as to where he could obtain a fuller account of the subject tersely discussed in the chapter he had contributed to the *Life of Owen*.[1]

HODESLEA, *Jan.* 26, 1895.

MY DEAR FARRER—Miserable me! Having addressed myself to clear off a heap of letters that have been accumulating, I find I have not answered an enquiry of yours of nearly a month's standing. I am sorry to say that I cannot tell you of any book (readable or otherwise) that will convert my "pemmican" into decent broth for you.

There are histories of zoology and of philosophical anatomy, but they all of them seem to me to miss the point (which you have picked out of the pemmican). Indeed, that is just why I took such a lot of pains over these 50 or 60 pages. And I am immensely tickled by the fact that among all the critical notices I have seen, not a soul sees what I have been driving at as you have done. I really wish you would write a notice of it, just to show these Gigadibses (*vide* Right Rev. Bloughram) what blind buzzards they are!

Enter a maid. "Please sir, Mrs. Huxley says she would be glad if you would go out in the sun." "All right, Allen." Anecdote for your next essay on Government!

The fact is, I have been knocked up ever since Tuesday, when our University Deputation came off; and my good wife (who is laid up herself) suspects me (not without reason) of failing to take advantage of a gleam of sunshine.

[1] "Which," wrote Lord Farrer, "is just what I wanted as an outline of the Biological and Morphological discussion of the last 100 years. But it is 'Pemmican' to an aged and enfeebled digestion. Is there such a thing as a diluted solution of it in the shape of any readable book?"

By the way, can you help us over the University business? Lord Rosebery is favourable, and there is absolutely nobody on the other side except sundry Philistines, who, having got their degrees, are desirous of inflating their market value.—Yours very truly,

T. H. HUXLEY.

The next is in answer to an appeal for a subscription, from the Church Army.

Jan. 26, 1895.

I regret that I am unable to contribute to the funds of the Church Army.

I hold it to be my duty to do what I can for the cases of distress of which I have direct knowledge; and I am glad to be able now and then to give timely aid to the industrious and worthy people with whom, as a householder, I am brought into personal relation; and who are so often engaged in a noiseless and unpitied but earnest struggle to do well.

In my judgment, a domestic servant, who is perhaps giving half her wages to support her old parents, is more worthy of help than half a dozen Magdalens.

Under these circumstances, you will understand that such funds as are at my disposal are already fully engaged.

The following is to a gentleman—an American, I think—who sent him a long manuscript, an extraordinary farrago of nonsense, to read and criticise, and help to publish. But as he seemed to have acted in sheer simplicity, he got an answer:—

HODESLEA, *Jan.* 31, 1895.

DEAR SIR—I should have been glad if you had taken the ordinary, and, I think, convenient course of writing for my permission before you sent the essay which has reached me, and which I return by this post. I should then have had the opportunity of telling you that I do not undertake to read, or take any charge of such matters, and we should both have been spared some trouble.

I the more regret this, since being unwilling to return your work without examination, I have looked at it, and feel bound to give you the following piece of advice, which I fear may be distasteful, as good counsel generally is.

Lock up your essay. For two years—if possible, three—read no popular expositions of science, but devote yourself to a course of sound *practical* instruction in elementary physics, chemistry, and biology.

Then re-read your essay; do with it as you think best; and, if possible, regard a little more kindly than you are likely to do at present, yours faithfully, T. H. HUXLEY.

The following passage from a letter to Sir J. D. Hooker refers to a striking discovery made by Dubois:—

HODESLEA, EASTBOURNE,
Feb. 14, 1895.

The Dutchmen seem to have turned up something like the "missing link" in Java, according to a paper I have just received from Marsh. I expect he was a Socratic party, with his hair rather low down on his forehead and warty cheeks.

Pithecanthropus erectus Dubois (fossil)

rather Aino-ish about the body, small in the calf, and cheese-cutting in the shins. Le voici!

turned up smelling like
the nursing lik'd in Java —
according to a paper I have
just received from Marsh.
I expect he was a Socrates party
with his hair rather low down
on his forehead & wanty cheeks

Pithecanthropus
erectus. Dubois
(fossil)

rather Aino-ish about the
body small in the calf & chiese
cutting in the skin. Le voice!

CHAPTER XXIII

1895

Two months of almost continuous frost, during which the thermometer fell below zero, marked the winter of 1894-95. Tough, if not strong, as Huxley's constitution was, this exceptional cold, so lowering to the vitality of age, accentuated the severity of the illness which followed in the train of influenza, and at last undermined even his powers of resistance.

But until the influenza seized him, he was more than usually vigorous and brilliant. He was fatigued, but not more so than he expected, by attending a deputation to the Prime Minister in the depth of January, and delivering a speech on the London University question; and in February he was induced to write a reply to the attack upon agnosticism contained in Mr. Arthur Balfour's *Foundations of Belief*. Into this he threw himself with great energy, all the more because the notices in the daily press were likely to give the reading public a wrong impression as to its polemic against his own position. Mr. Wilfrid Ward gives an account of a conversation with him on this subject:—

Some one had sent me Mr. A. J. Balfour's book on the *Foundations of Belief* early in February 1895. We were very full of it, and it was the theme of discussion on the 17th of February, when two friends were lunching with us. Not long after luncheon, Huxley came in, and seemed in extraordinary spirits. He began talking of Erasmus and Luther, expressing a great preference for Erasmus, who would, he said, have impregnated the Church with culture, and brought it abreast of the thought of the times, while Luther concentrated attention on individual mystical doctrines. "It was very

trying for Erasmus to be identified with Luther, from whom he differed absolutely. A man ought to be ready to endure persecution for what he does hold; but it is hard to be persecuted for what you don't hold." I said that I thought his estimate of Erasmus's attitude towards the Papacy coincided with Professor R. C. Jebb's. He asked if I could lend him Jebb's Rede Lecture on the subject. I said that I had not got it at hand, but I added, "I can lend you another book, which I think you ought to read—Balfour's *Foundations of Belief*."

He at once became extremely animated, and spoke of it as those who have read his criticisms, published in the following month, would expect. "You need not lend me that. I have exercised my mind with it a good deal already. Mr. Balfour ought to have acquainted himself with the opinions of those he attacks. One has no objection to being abused for what one *does* hold, as I said of Erasmus; at least, one is prepared to put up with it. An attack on us by some one who understood our position would do all of us good—myself included. But Mr. Balfour has acted like the French in 1870: he has gone to war without any ordnance maps, and without having surveyed the scene of the campaign. No human being holds the opinions he speaks of as 'naturalism.' He is a good debater. He knows the value of a word. The word 'Naturalism' has a bad sound and unpleasant associations. It would tell against us in the House of Commons, and so it will with his readers. 'Naturalism' contrasts with 'supernaturalism.' He has not only attacked us for what we don't hold, but he has been good enough to draw out a catechism for 'us wicked people,' to teach us what we *must* hold."

It was rather difficult to get him to particulars, but we did so by degrees. He said, "Balfour uses the word *phenomena* as applying simply to the outer world and not to the inner world. The only people his attack would hold good of would be the Comtists, who deny that psychology is a science. They may be left out of account. They advocate the crudest eighteenth-century materialism. All the empiricists, from Locke onwards, make the observation of the phenomena of the mind itself quite separate from the study of mere sensation. No man in his senses supposes that the sense of beauty, or the religious feelings (this with a courteous bow to a priest who was present), or the sense of moral obligation, are to be accounted for in terms of sensation, or come to us through sensation." I said that, as I understood it, I did not think Mr. Balfour supposed they would acknowledge the position he ascribed to them, and that one of his complaints was that they did not work out their premises to their logical conclusions. I added that so far as one of Mr. Balfour's chief points was concerned—the existence of the external world—Mill was almost the only man on their side in this century who had faced the problem frankly, and he had been

driven to say that all men can know is that there are "permanent possibilities of sensation." He did not seem inclined to pursue the question of an external world, but said that though Mill's "logic" was very good, empiricists were not bound by all his theories.

He characterised the book as a very good and even brilliant piece of work from a literary point of view; but as a helpful contribution to the great controversy, the most disappointing he had ever read. I said, "There has been no adverse criticism of it yet." He answered with emphasis, "No! *but there soon will be.*" "From you?" I asked. "I let out no secrets," was the reply.

He then talked with great admiration and affection of Mr. Balfour's brother, Francis. His early death, and W. K. Clifford's (Huxley said), had been the greatest loss to science—not only in England, but in the world—in our time. "Half a dozen of us old fogies could have been better spared." He remembered Frank Balfour as a boy at Eton, and saw his unusual talent there. "Then my friend, Michael Foster, took him up at Cambridge, and found out that he had real genius for biology. I used to say there was science in the blood," but this new book of his brother's, he added, smiling, "shows I was wrong."

Apropos to his remark about the Comtists, one of the company pointed out that in later life Comte recognised a science of "the individual," equivalent to what Huxley meant by psychology. "That," he replied, "was due to the influence of Clotilde de Vaux. You see," he added, "with a kind of Sir Charles Grandison bow to my wife, "what power your sex may have." As Huxley was going out of the house, I said to him that Father A. B. (the priest who had been present) had not expected to find himself in his company. "No! I trust he had plenty of holy water with him," was the reply.

. . . After he had gone, we were all agreed as to the extraordinary vigour and brilliancy he had shown. Some one said, "He is like a man who is what the Scotch call 'fey.'" We laughed at the idea, but we naturally recalled the remark later on.

The story of how the article was written is told in the following letters. It was suggested by Mr. Knowles, and undertaken after perusal of the review of the book in the *Times*. Huxley intended to have the article ready for the March number of the *Nineteenth Century*, but it grew longer than he had meant it to be, and partly for this reason, partly for fear lest the influenza, then raging at Eastbourne, might prevent him from revising the whole thing at once, he divided it into two instalments. He writes to one daughter on March 1 :—

I suppose my time will come; so I am "making hay while the sun shines" (in point of fact it is raining and blowing a gale outside) and finishing my counterblast to Balfour before it does come.

Love to all you poor past snivellers from an expectant sniveller.

And to another :—

I think the cavalry charge in this month's *Nineteenth* will amuse you. The heavy artillery and the bayonets will be brought into play next month.

Dean Stanley told me he thought being made a bishop destroyed a man's moral courage. I am inclined to think that the practice of the methods of political leaders destroys their intellect for all serious purposes.

No sooner was the first part safely sent off than the contingency he had feared came to pass; only, instead of the influenza meaning incapacity for a fortnight, an unlucky chill brought on bronchitis and severe lung trouble.[1] The second part of the article was never fully revised for press.

HODESLEA, EASTBOURNE,
February 8, 1895.

MY DEAR KNOWLES—Your telegram came before I had looked at to-day's *Times* and the article on Balfour's book, so I answered with hesitation.

Now I am inclined to think that the job may be well worth doing, in that it will give me the opportunity of emphasising the distinction between the view I hold and Spencer's, and perhaps of proving that Balfour is an agnostic after my own heart. So please send the book.

Only if this infernal weather, which shrivels me up soul and body, lasts, I do not know how long I may be over the business. However, you tell me to take my own time.—Ever yours very faithfully, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
February 18, 1895.

MY DEAR KNOWLES—I send you by this post an instalment (the larger moiety) of my article, which I should be glad to have set up

[1] As he wrote on February 28 to Sir M. Foster: "If I could compound for a few hours' neuralgia, I would not mind; but those long weeks of debility make me very shy of the influenza demon. Here we are practically isolated. . . . I once asked Gordon why he didn't have the African fever. 'Well,' he said, 'you see, fellows think they shall have it, and they do. I didn't think so, and didn't get it.' Exercise your thinking faculty to that extent."

at once *in slip*, and sent to me as speedily as may be. The rest shall follow in the course of the next two or three days.

I am rather pleased with the thing myself, so it is probably not so very good! But you will judge for yourself.—Ever yours very faithfully, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
February 19, 1895.

MY DEAR KNOWLES—We send our best congratulations to Mrs. Knowles and yourself on the birth of a granddaughter. I forget whether you have had any previous experience of the "Art d'être Grandpère" or not—but I can assure you, from 14 such experiences, that it is easy and pleasant of acquirement, and that the objects of it are veritable "articles de luxe," involving much amusement and no sort of responsibility on the part of the possessor.

You shall have the rest of my screed by to-morrow's post.—Ever yours very faithfully, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
February 20, 1895.

MY DEAR KNOWLES—Seven mortal hours have I been hard at work this day to try to keep my promise to you, and as I find that impossible, I have struck work and will see Balfour and his *Foundations*, and even that ark of literature the *Nineteenth*, at Ballywack, before I do any more.

But the whole affair shall be sent by a morning's post to-morrow. I have the proofs. I have found the thing getting too long for one paper, and requiring far more care than I could put into the next two days—so I propose to divide it, if you see no objection.

And there is another reason for this course. Influenza is raging here. I hear of hundreds of cases, and if it comes my way, as it did before, I go to bed and stop there—"the world forgetting and by the world forgot"—until I am killed or cured. So you would not get your article.

As it stands, it is not a bad gambit. We will play the rest of the game afterwards, D.V. and K.V.

Hope mother and baby are doing well.—Ever yours,
T. H. HUXLEY.

HODESLEA, EASTBOURNE,
February 23, 1895, 12.30 P.M.

MY DEAR KNOWLES—I have just played and won as hard a match against time as I ever knew in the days of my youth. The proofs, happily, arrived by the first post, so I got to work at them before 9, polished them off by 12, and put them into the post (myself) by 12.5. So you ought to have them by 6 P.M. And, to

make your mind easy, I have just telegraphed to you to say so. But, Lord's sake! let some careful eye run over the part of which I have had no revise—for I am "capable de tout" in the way of overlooking errors.

I am very glad you like the thing. The second instalment shall be no worse.

I grieve to say that my estimation of Balfour, as a thinker, sinks lower and lower, the further I go.

God help the people who think his book an important contribution to thought! The Gigadibsians who say so are past divine assistance!

We are very glad to hear the grandchild and mother are getting on so well.—Ever yours very truly, T. H. HUXLEY.

HODESLEA, EASTBOURNE,
March 8, 1895.

MY DEAR KNOWLES—The proofs have just arrived, but I am sorry to say that (I believe for the first time in our transactions) I shall have to disappoint you.

Just after I had sent off the MS. influenza came down upon me with a swoop. I went to bed and am there still, with no chance of quitting it in a hurry. My wife is in the same case; *item* one of the maids. The house is a hospital, and by great good fortune we have a capital nurse.

Doctor says it's a mild type,[1] in which case I wonder what severe types may be like. I find coughing continuously for fourteen hours or so a queer kind of mildness.

Could you put in an excuse on account of influenza?

Can't write any more.—Ever yours, T. H. H.

HODESLEA, EASTBOURNE,
March 19, 1895.

MY DEAR KNOWLES—I am making use of the pen of my dear daughter and good nurse, in the first place to thank you for your cheque, in the second place to say that you must not look for the article this month. I haven't been out of bed since the 1st, but they are fighting a battle with bronchitis over my body.—Ever yours very faithfully, For T. H. H.,
SOPHY HUXLEY.

The next four months were a period of painful struggle against disease, borne with a patience and gentleness which was rare even in the long experience of the trained nurses

[1] "But in the matter of aches and pains, restless paroxysms of coughing and general incapacity, I can give it a high character for efficiency." (To M. Foster, March 7.)

who tended him. To natural toughness of constitution he added a power of will unbroken by the long strain; and for the sake of others to whom his life meant so much, he wished to recover and willed to do everything towards recovery. And so he managed to throw off the influenza and the severe bronchitis which attended it. What was marvellous at his age, and indeed would scarcely have been expected in a young man, most serious mischief induced by the bronchitis disappeared. By May he was strong enough to walk from the terrace to the lawn and his beloved saxifrages, and to remount the steps to the house without help.

But though the original attack was successfully thrown off, the lung trouble had affected the heart; and in his weakened state, renal mischief ensued. Yet he held out splendidly, never giving in, save for one hour of utter prostration, all through this weary length of sickness. His first recovery strengthened him in expecting to get well from the second attack. And on June 10 he writes brightly enough to Sir J. D. Hooker:—

HODESLEA, EASTBOURNE,
June 10, 1895.

MY DEAR OLD FRIEND—It was cheering to get your letter and to hear that you had got through winter and diphtheria without scathe.

I can't say very much for myself yet, but I am carried down to a tent in the garden every day, and live in the fresh air all I can. The thing that keeps me back is an irritability of the stomach tending to the rejection of all solid food. However, I think I am slowly getting the better of it—thanks to my constitutional toughness and careful nursing and dieting.

What has Spencer been trampling on the "Pour le mérite" for, when he accepted the Lyncei? I was just writing to congratulate him when, by good luck, I saw he had refused!

The beastly nausea which comes on when I try to do anything warns me to stop.

With our love to you both—Ever yours, T. H. HUXLEY.

The last time I saw him was on a visit to Eastbourne from June 22-24. I was astonished to find how well he looked in spite of all; thin, indeed, but browned with the endless sunshine of the 1895 summer as he sat every day in the verandah. His voice was still fairly strong; he was delighted to see us about him, and was cheerful, even merry

at times. As the nurse said, she could not expect him to recover, but he did not look like a dying man. When I asked him how he was, he said, "A mere carcass, which has to be tended by other people." But to the last he looked forward to recovery. One day he told the nurse that the doctors must be wrong about the renal mischief, for if they were right, he ought already to be in a state of coma. This was precisely what they found most astonishing in his case; it seemed as if the mind, the strong nervous organisation, were triumphing over the shattered body. Herein lay one of the chief hopes of ultimate recovery.

As late as June 26 he wrote, with shaky handwriting but indomitable spirit, to relieve his old friend from the anxiety he must feel from the newspaper bulletins.

HODESLEA, EASTBOURNE,
June 26, 1895.

MY DEAR HOOKER—The pessimistic reports of my condition which have got into the papers may be giving you unnecessary alarm for the condition of your old comrade. So I send a line to tell you the exact state of affairs.

There is kidney mischief going on—and it is accompanied by very distressing attacks of nausea and vomiting, which sometimes last for hours and make life a burden.

However, strength keeps up very well considering, and of course all depends upon how the renal business goes. At present I don't feel at all like "sending in my checks," and without being over sanguine I rather incline to think that my native toughness will get the best of it—albuminuria or otherwise.—Ever your faithful friend,

T. H. H.

Misfortunes never come single. My son-in-law, Eckersley, died of yellow fever the other day at San Salvador—just as he was going to take up an appointment at Lima worth £1200 a year. Rachel and her three children have but the slenderest provision.

The next two days there was a slight improvement, but on the third morning the heart began to fail. The great pain subdued by anæsthetics, he lingered on about seven hours, and at half-past three on June 29 passed away very quietly.

He was buried at Finchley, on July 4, beside his brother George and his little son Noel, under the shadow of the oak,

which had grown up into a stately young tree from the little sapling it had been when the grave of his first-born was dug beneath it, five and thirty years before.

There was no official ceremony. An old friend, Mr. Llewellyn Davies, came from Kirby Lonsdale to read the service; the many friends who gathered at the grave-side were there as friends mourning the death of a friend, and all touched with the same sense of personal loss.

By his special direction, three lines from a poem written by his wife, were inscribed upon his tombstone—lines inspired by his own robust conviction that, all question of the future apart, this life as it can be lived, pain, sorrow, and evil notwithstanding, is worth—and well worth—living:—

> Be not afraid, ye waiting hearts that weep;
> For still He giveth His belovèd sleep,
> And if an endless sleep He wills, so best.

CHAPTER XXIV

He had intellect to comprehend his highest duty distinctly, and force of character to do it; which of us dare ask for a higher summary of his life than that?

Such was Huxley's epitaph upon Henslow; it was the standard which he endeavoured to reach in his own life. It is the expression of that passion for veracity which was perhaps his strongest characteristic; an uncompromising passion for truth in thought, which would admit no particle of self-deception, no assertion beyond what could be verified; for truth in act, perfect straightforwardness and sincerity, with complete disregard of personal consequences for uttering unpalatable fact.

Truthfulness, in his eyes, was the cardinal virtue, without which no stable society can exist. Conviction, sincerity, he always respected, whether on his own side or against him. Clever men, he would say, are as common as blackberries; the rare thing is to find a good one. The lie from interested motives was only more hateful to him than the lie from self-delusion or foggy thinking. With this he classed the "sin of faith," as he called it; that form of credence which does not fulfil the duty of making a right use of reason; which prostitutes reason by giving assent to propositions which are neither self-evident nor adequately proved.

This principle has always been far from finding universal acceptance. One of his theological opponents went so far as to affirm that a doctrine may be not only held, but dogmatically insisted on, by a teacher who is, all the time, fully aware that science may ultimately prove it to be quite untenable.

His own course went to the opposite extreme. In teaching, where it was possible to let the facts speak for themselves, he did not further urge their bearing upon wider problems. He preferred to warn beginners against drawing superficial inferences in favour of his own general theories, from facts the real meaning of which was not immediately apparent. Father Hahn (S.J.), who studied under him in 1876, writes :—

One day when I was talking to him, our conversation turned upon evolution. "There is one thing about you I cannot understand," I said, "and I should like a word in explanation. For several months now I have been attending your course, and I have never heard you mention evolution, while in your public lectures everywhere you openly proclaim yourself an evolutionist."[1]

Now it would be impossible to imagine a better opportunity for insisting on evolution than his lectures on comparative anatomy, when animals are set side by side in respect of the gradual development of functions. But Huxley was so reserved on this subject in his lectures that, speaking one day of a species forming a transition between two others, he immediately added :—

"When I speak of transition I do not in the least mean to say that one species turned into a second to develop thereafter into a third. What I mean is, that the characters of the second are intermediate between those of the two others. It is as if I were to say that such and such a cathedral, Canterbury, for example, is a transition between York Minster and Westminster Abbey. No one would imagine, on hearing the word transition, that a transmutation of these buildings actually took place from one into another."

But to return to his reply :—

"Here in my teaching lectures (he said to me) I have time to put the facts fully before a trained audience. In my public lectures I am obliged to pass rapidly over the facts, and I put forward my personal convictions. And it is for this that people come to hear me."

As to the question whether children should be brought up in entire disregard to the beliefs rejected by himself, but still current among the mass of his fellow-countrymen, he was of opinion that they ought to know "the mythology of their time and country," otherwise one would at the best

[1] *Revue des Questions Scientifiques* (Brussels), for October 1895.

tend to make young prigs of them; but as they grew up, their questions should be answered frankly.[1]

The natural tendency to veracity, strengthened by the observation of the opposite quality in one with whom he was early brought into contact, received its decisive impulse, as has been told before, from Carlyle, whose writings confirmed and established his youthful reader in a hatred of shams and make-believes equal to his own.

In his mind no compromise was possible between truth and untruth.[2] Against authorities and influences he published *Man's Place in Nature*, though warned by his friends that to do so meant ruin to his prospects. When he had once led the way and challenged the upholders of conventional orthodoxy, others backed him up with a whole armoury of facts. But his fight was as far as possible for the truth itself, for fact, not merely for controversial victory or personal triumph. Yet, as has been said by a representative of a very different school of thought, who can wonder that he should have hit out straight from the shoulder, in reply to violent or insidious attacks, the stupidity of which sometimes merited scorn as well as anger?

In his theological controversies he was no less careful to avoid any approach to mere abuse or ribaldry such as some opponents of Christian dogma indulged in. For this reason he refused to interpose in the well-known Foote case. Discussion, he said, could be carried on effectually without deliberate wounding of others' feelings.

As he wrote in reply to an appeal for help in this case (March 12, 1883):—

> I have not read the writings for which Mr. Foote was prosecuted. But, unless their nature has been grossly misrepresented, I cannot say that I feel disposed to intervene on his behalf.

[1] The wording of a paragraph in Professor Mivart's "Reminiscences" (*Nineteenth Century*, December 1897, p. 993), tends, I think, to leave a wrong impression on this point.

[2] As he once said, when urged to write a more eulogistic notice of a dead friend than he thought deserved, "The only serious temptations to perjury I have ever known have arisen out of the desire to be of some comfort to people I cared for in trouble. If there are such things as Plato's 'Royal Lies' they are surely those which one is tempted to tell on such occasions. Mrs. —— is such a good devoted little woman, and I am so doubtful about having a soul, that it seems absurd to hesitate to peril it for her satisfaction."

I am ready to go great lengths in defence of freedom of discussion, but I decline to admit that rightful freedom is attacked, when a man is prevented from coarsely and brutally insulting his neighbours' honest beliefs.

I would rather make an effort to get legal penalties inflicted with equal rigour on some of the anti-scientific blasphemers—who are quite as coarse and unmannerly in their attacks on opinions worthy of all respect as Mr. Foote can possibly have been.

The grand result of his determination not to compromise where truth was concerned, was the securing freedom of thought and speech. One man after another, looking back on his work, declares that if we can say what we think now, it is because he fought the battle of freedom. Not indeed the battle of toleration, if toleration means toleration of error for its own sake. Error, he thought, ought to be extirpated by all legitimate means, and not assisted because it is conscientiously held.

As Lord Hobhouse wrote, soon after his death :—

I see now many laudatory notices of him in papers. But I have not seen, and I think the younger men do not know, that which (apart from science) I should put forward as his strongest claim to reverence and gratitude; and that is the steadfast courage and consummate ability with which he fought the battle of intellectual freedom, and insisted that people should be allowed to speak their honest convictions without being oppressed or slandered by the orthodox. He was one of those, perhaps the very foremost, who won that priceless freedom for us; and, as is too common, people enter into the labours of the brave, and do not even know what their elders endured, or what has been done for themselves.

With this went a proud independence of spirit, intolerant of patronage, careless of titular honours, indifferent to the accumulation of worldly wealth. He cared little even for recognition of his work; "If I had £400 a year,"[1] he exclaimed at the outset of his career, "I should be content to work anonymously for the advancement of science." The only recognition he considered worth having, was that of the scientific world; yet so little did he seek it, so little insist on questions of priority, that, as Professor Howes tells me, there are at South Kensington among the mass of unpublished drawings

[1] A sum which might have supported a bachelor, but was entirely inadequate to the needs of a large family.

from dissections made by him, many which show that he had arrived at discoveries which afterwards brought credit to other investigators.

He was as ready to disclaim for himself any merits which really belonged to his predecessors, whether philosophical or scientific. He was too well read in their works not to be aware of the debt owed them by his own generation, and he reminded the world how little the scientific insight of Goethe, for instance, or the solid labours of Buffon or Réaumur or Lamarck, deserved oblivion.

The only point on which he did claim recognition was the honesty of his motives. He was incapable of doing anything underhand, and he could not bear even the appearance of such conduct towards his friends, or those with whom he had business relations. In such cases he always took the bull by the horns, acknowledged an oversight or explained what was capable of misunderstanding. The choice between Edward Forbes and Hooker for the Royal Society's medal, or the explanations to Mr. Spencer for not joining a social reform league of which the latter was a prominent member, will serve as instances.

> The most considerable difference I note among men (he wrote,) is not in their readiness to fall into error, but in their readiness to acknowledge these inevitable lapses.

For himself, he let no personal feelings stand in the way when fact negatived his theories: once convinced that they were untenable, he gave up *Bathybius* and the European origin of the Horse without hesitation.

The regard in which he was held by his friends was such that he was sometimes appealed to by both parties in a dispute. He was a man to be trusted with the confidence of his friends. "Yes, you are quite right about 'loyal,'" he writes to Mr. Knowles, "I love my friends and hate my enemies—which may not be in accordance with the Gospel, but I have found it a good wearing creed for honest men." But he only regarded as "enemies" those whom he found to be double-dealers, shufflers, insincere, untrustworthy; a fair opponent he respected, and he could agree to differ with a friend without altering his friendship.

A lifelong impression of him was thus summed up by Dr. A. R. Wallace :—

I find that he was my junior by two years, yet he has always seemed to me to be the older, mainly no doubt, because from the very first time I saw him (now more than forty years ago), I recognised his vast superiority in ability, in knowledge, and in all those qualities that enable a man to take a foremost place in the world. I owe him thanks for much kindness and for assistance always cordially given, and although we had many differences of opinion, I never received from him a harsh or unkind word.

To those who could only judge him from his controversial literature, or from a formal business meeting, he often appeared hard and unsympathetic, but never to those who saw beneath the surface. In personal intercourse, if he disliked a man—and a strong individuality has strong likes and dislikes—he would merely veil his feelings under a superabundant politeness of the chilliest kind ; but to any one admitted to his friendship he was sympathy itself. And thus, although I have heard him say that his friends, in the fullest sense of the word, could be reckoned on the fingers of one hand, the impression he made upon all who came within the circle of his friendship was such that quite a number felt themselves to possess his intimacy, and one wrote, after his death : "His many private friends are almost tempted to forget the public loss, in thinking of the qualities which so endeared him to them all."

Both the speculative and the practical sides of his intellect were strongly developed. On the one hand, he had an intense love of knowledge, the desire to attain true knowledge of facts, and to organise them in their true relations. His contributions to pure science never fail to illustrate both these tendencies. His earlier researches brought to light new facts in animal life, and new ideas as to the affinities of the creatures he studied ; his later investigations were coloured by Darwin's views, and in return contributed no little direct evidence in favour of evolution. But while the progress of the evolution theory in England owed more to his clear and unwearied exposition than to any other cause, while from the first he had indicated the points, such as the causes of sterility and variation, which must be cleared

up by further investigation in order to complete the Darwinian theory, he did not add another to the many speculations since put forward.

On the other hand, intense as was his love of pure knowledge, it was balanced by his unceasing desire to apply that knowledge in the guidance of life. Always feeling that science was not solely for the men of science, but for the people, his constant object was to help the struggling world to ideas which should help them to think truly and so to live rightly. It is still true, he declared, that the people perish for want of knowledge. "If I am to be remembered at all," he writes (see Vol. I. p. 476), "I should like to be remembered as one who did his best to help the people." And again, he says in his Autobiographical Sketch, that other marks of success were as nothing if he could hope that he "had somewhat helped that movement of opinion which has been called the New Reformation."

This kind of aim in his work, of taking up the most fruitful idea of his time and bringing it home to all, is typified by his remark as he entered New York harbour on his visit to America in 1876, and watched the tugs hard at work as they traversed the bay. "If I were not a man," he said, "I think I should like to be a tug."

Two incidents may be cited to show that he did not entirely fail of appreciation among those whom he tried to help. Speaking of the year 1874, Professor Mivart writes (Reminiscences of T. H. Huxley, *Nineteenth Century*, Dec. 1897):—

> I recollect going with him and Mr. John Westlake, Q.C., to a meeting of artisans in the Blackfriars Road, to whom he gave a friendly address. He felt a strong interest in working-men, and was much beloved by them. On one occasion, having taken a cab home, on his arrival there, when he held out his fare to the cab-man, the latter replied, "Oh no, Professor, I have had too much pleasure and profit from hearing you lecture to take any money from your pocket—proud to have driven you, sir!"

The other is from a letter to the *Pall Mall Gazette* of September 20, 1892, from Mr. Raymond 'Blaythwayt, on "The Uses of Sentiment":—

Only to-day I had a most striking instance of sentiment come beneath my notice. I was about to enter my house, when a plain, simply-dressed working-man came up to me with a note in his hand, and touching his hat, he said, "I think this is for you, sir," and then he added, "Will you give me the envelope, sir, as a great favour?" I looked at it, and seeing it bore the signature of Professor Huxley, I replied, "Certainly I will; but why do you ask for it?" "Well," said he, "it's got Professor Huxley's signature, and it will be something for me to show my mates and keep for my children. He have done me and my like a lot of good; no man more."

In practical administration, his judgment of men, his rapid perception of the essential points at issue, his observance of the necessary limits of official forms, combined with the greatest possible elasticity within these limits, made him extremely successful.

As Professor (writes the late Professor Jeffery Parker), Huxley's rule was characterised by what is undoubtedly the best policy for the head of a department. To a new subordinate, "The General," as he was always called, was rather stern and exacting, but when once he was convinced that his man was to be trusted, he practically let him take his own course; never interfered in matters of detail, accepted suggestions with the greatest courtesy and good humour, and was always ready with a kindly and humorous word of encouragement in times of difficulty. I was once grumbling to him about how hard it was to carry on the work of the laboratory through a long series of November fogs, "when neither sun nor stars in many days appeared." "Never mind, Parker," he said, instantly capping my quotation, "cast four anchors out of the stern and wish for day."

Nothing, indeed, better illustrates this willingness to listen to suggested improvements than the inversion of the order of studies in the biological course which he inaugurated in 1872, namely, the substitution of the anatomy of a vertebrate for the microscopic examination of a unicellular organism as the opening study. This was entirely Parker's doing. "As one privileged at the time to play a minor part," writes Professor Howes (*Nature*, January 6, 1898, p. 228), "I well recall the determination in Parker's mind that the change was desirable, and in Huxley's, that it was not. Again and again did Parker appeal in vain, until at last, on the morning of October 2, 1878, he triumphed."

On his students he made a deep and lasting impression.

His lectures (writes Jeffery Parker) were like his writings, luminously clear, without the faintest disposition to descend to the level of his audience; eloquent, but with no trace of the empty rhetoric which so often does duty for that quality; full of a high seriousness, but with no suspicion of pedantry; lightened by an occasional epigram or flashes of caustic humour, but with none of the small jocularity in which it is such a temptation to a lecturer to indulge. As one listened to him one felt that comparative anatomy was indeed worthy of the devotion of a life, and that to solve a morphological problem was as fine a thing as to win a battle. He was an admirable draughtsman, and his blackboard illustrations were always a great feature of his lectures, especially when, to show the relation of two animal types, he would, by a few rapid strokes and smudges, evolve the one into the other before our eyes. He seemed to have a real affection for some of the specimens illustrating his lectures, and would handle them in a peculiarly loving manner; when he was lecturing on man, for instance, he would sometimes throw his arm over the shoulder of the skeleton beside him and take its hand, as if its silent companionship were an inspiration. To me his lectures before his small class at Jermyn Street or South Kensington were almost more impressive than the discourses at the Royal Institution, where for an hour and a half he poured forth a stream of dignified, earnest, sincere words in perfect literary form, and without the assistance of a note.

Another description is from the pen of an old pupil in the autumn of 1876, Professor H. Fairfield Osborn, of Columbia College:—

Huxley, as a teacher, can never be forgotten by any of his students. He entered the lecture-room promptly as the clock was striking nine,[1] rather quickly, and with his head bent forward "as if oppressive with its mind." He usually glanced attention to his class of about ninety, and began speaking before he reached his chair. He spoke between his lips, but with perfectly clear analysis, with thorough interest, and with philosophic insight which was far above the average of his students. He used very few charts, but handled the chalk with great skill, sketching out the anatomy of an animal as if it were a transparent object. As in Darwin's face, and as in Erasmus Darwin's or Buffon's, and many other anatomists with a strong sense of form, his eyes were heavily overhung by a projecting forehead and eyebrows, and seemed at times to look inward. His lips were firm and closely set, with the expression of

[1] In most years the lectures began at ten.

positiveness, and the other feature which most marked him was the very heavy mass of hair falling over his forehead, which he would frequently stroke or toss back. Occasionally he would light up the monotony of anatomical description by a bit of humour.

Huxley was the father of modern laboratory instruction; but in 1879 he was so intensely engrossed with his own researches that he very seldom came through the laboratory, which was ably directed by T. Jeffery Parker, assisted by Howes and W. Newton Parker, all of whom are now professors, Howes having succeeded to Huxley's chair. Each visit, therefore, inspired a certain amount of terror, which was really unwarranted, for Huxley always spoke in the kindest tones to his students, although sometimes he could not resist making fun at their expense. There was an Irish student who sat in front of me, whose anatomical drawings in water-colour were certainly most remarkable productions. Huxley, in turning over his drawing-book, paused at a large blur, under which was carefully inscribed, "sheep's liver," and smilingly said, "I am glad to know that is a liver; it reminds me as much of Cologne cathedral in a fog as of anything I have ever seen before." Fortunately the nationality of the student enabled him to fully appreciate the humour.

The same note is sounded in Professor Mivart's description of these lectures in his Reminiscences:—

The great value of Huxley's anatomical ideas, and the admirable clearness with which he explained them, led me in the autumn of 1861 to seek admission as a student to his course of lectures at the School of Mines in Jermyn Street. When I entered his small room there to make this request, he was giving the finishing touches to a dissection of part of the nervous system of a skate, worked out for the benefit of his students. He welcomed my application with the greatest cordiality, save that he insisted I should be only an honorary student, or rather, should assist at his lectures as a friend. I availed myself of his permission on the very next day, and subsequently attended almost all his lectures there and elsewhere, so that he one day said to me, "I shall call you my 'constant reader.'" To be such a reader was to me an inestimable privilege, and so I shall ever consider it. I have heard many men lecture, but I never heard anyone lecture as did Professor Huxley. He was my very ideal of a lecturer. Distinct in utterance, with an agreeable voice, lucid as it was possible to be in exposition, with admirably chosen language, sufficiently rapid, yet never hurried, often impressive in manner, yet never otherwise than completely natural, and sometimes allowing his audience a glimpse of that rich fund of humour ever ready to well forth when occasion permitted, sometimes accompanied with an extra gleam in his bright dark eyes, sometimes expressed with a dryness and gravity of look which gave it a double zest.

I shall never forget the first time I saw him enter his lecture-room. He came in rapidly, yet without bustle, and as the clock struck, a brief glance at his audience and then at once to work. He had the excellent habit of beginning each lecture (save, of course, the first) with a recapitulation of the main points of the preceding one. The course was amply illustrated by excellent coloured diagrams, which, I believe, he had made; but still more valuable were the chalk sketches he would draw on the blackboard with admirable facility, while he was talking, his rapid, dexterous strokes quickly building up an organism in our minds, simultaneously through ear and eye. The lecture over, he was ever ready to answer questions, and I often admired his patience in explaining points which there was no excuse for anyone not having understood.

Still more was I struck with the great pleasure which he showed when he saw that some special points of his teaching had not only been comprehended, but had borne fruit, by their suggestiveness in an appreciative mind.

To one point I desire specially to bear witness. There were persons who dreaded sending young men to him, fearing lest their young friends' religious beliefs should be upset by what they might hear said. For years I attended his lectures, but never once did I hear him make use of his position as a teacher to inculcate, or even hint at, his own theological views, or to depreciate or assail what might be supposed to be the religion of his hearers. No one could have behaved more loyally in that respect, and a proof that I thought so is that I subsequently sent my own son to be his pupil at South Kensington, where his experience confirmed what had previously been my own.

As to science, I learnt more from him in two years than I had acquired in any previous decade of biological study.

The picture is completed by Professor Howes in the *Students' Magazine* of the Royal College of Science:—

As a class lecturer Huxley was *facile princeps*, and only those who were privileged to sit under him can form a conception of his delivery. Clear, deliberate, never hesitant nor unduly emphatic, never repetitional, always logical, his every word told. Great, however, as were his class lectures, his working-men's were greater. Huxley was a firm believer in the "distillatio per ascensum" of scientific knowledge and culture, and spared no pains in approaching the artisan and so-called "working classes." He gave the workmen of his best. The substance of his "Man's Place in Nature," one of the most successful and popular of his writings, and of his "Crayfish," perhaps the most perfect zoological treatise ever published, was first communicated to them. In one of the last conversations I had with him, I asked his views on the desirability of discontinuing the

workmen's lectures at Jermyn Street, since the development of working-men's colleges and institutes is regarded by some to have rendered their continuance unnecessary. He replied, almost with indignation, "With our central situation and resources, we ought to be in a position to give the workmen that which they cannot get elsewhere," adding that he would deeply deplore any such discontinuance.

And now, a word or two concerning Huxley's personal conduct towards his pupils, hearers, and subordinates.

As an examiner he was most just, aiming only to ascertain the examinee's knowledge of fundamentals, his powers of work, and the manner in which he had been taught. A country school lad came near the boundary line in the examination; though generally weak, his worst fault was a confusion of the parts of the heart. In his description of that organ he had transposed the valves. On appeal, Huxley let him through, observing, most characteristically, "Poor little beggar, I never got them correctly myself until I reflected that a bishop was never in the right."[1] Again, a student of more advanced years, of the "mugging" type, who had come off with flying colours in an elementary examination, showed signs of uneasiness as the advanced one approached. "Stick an observation into him," said Huxley. It was stuck, and acted like a stiletto, a jump into the air and utter collapse being the result.

With his hearers Huxley was most sympathetic. He always assumed absolute ignorance on their part, and took nothing for granted.[2] When time permitted, he would remain after a lecture to answer questions; and in connection with his so doing his wonderful power of gauging and rising to a situation, once came out most forcibly. Turning to a student, he asked, "Well, I hope you understood it all." "All, sir, but one part, during which you stood between me and the blackboard," was the reply: the rejoinder, "I did my best to make myself clear, but could not render myself transparent." Quick of comprehension and of action, he would stand no nonsense. The would-be teacher who, wholly unfitted by nature for educational work, was momentarily dismissed, realised this, let us hope to his advantage. And the man suspected of taking notes of Huxley's lectures for publication unauthorised, probably learned the lesson of his life, on being reminded that, in the first place, a lecture was the property of the person who delivered it, and, in the second, he was not the first person who had mistaken aspiration for inspiration.

Though candid, Huxley was never unkind. . . .

Huxley never forgot a kindly action, never forsook a friend, nor allowed a labour to go unrewarded. In testimony to his

[1] The "mitral" valve being on the left side.

[2] This was a maxim on lecturing, adopted from Faraday.

sympathy to those about him and his self-sacrifice for the cause of science, it may be stated that in the old days, when the professors took the fees and disbursed the working expenses of the laboratories, he, doing this at a loss, would refund the fees of students whose position, from friendship or special circumstances, was exceptional.

As for his lectures and addresses to the public, they used to be thronged by crowds of attentive listeners.

Huxley's public addresses (writes Professor Osborn), always gave me the impression of being largely impromptu; but he once told me: "I always think out carefully every word I am going to say. There is no greater danger than the so-called *inspiration of the moment*, which leads you to say something which is not exactly true, or which you would regret afterwards."

Mr. G. W. Smalley has also left a striking description of him as a lecturer in the seventies and early eighties.

I used always to admire the simple and business-like way in which Huxley made his entry on great occasions. He hated anything like display, and would have none of it. At the Royal Institution, more than almost anywhere else, the lecturer, on whom the concentric circles of spectators in their steep amphitheatre look down, focuses the gaze. Huxley never seemed aware that anybody was looking at him. From self-consciousness he was, here as elsewhere, singularly free, as from self-assertion. He walked in through the door on the left, as if he were entering his own laboratory. In these days he bore scarcely a mark of age. He was in the full vigour of manhood and looked the man he was. Faultlessly dressed—the rule in the Royal Institution is evening costume—with a firm step and easy bearing, he took his place apparently without a thought of the people who were cheering him. To him it was an anniversary. He looked, and he probably was, the master. Surrounded as he was by the celebrities of science and the ornaments of London drawing-rooms, there was none who had quite the same kind of intellectual ascendancy which belonged to him. The square forehead, the square jaw, the tense lines of the mouth, the deep flashing dark eyes, the impression of something more than strength he gave you, an impression of sincerity, of solid force, of immovability, yet with the gentleness arising from the serene consciousness of his strength—all this belonged to Huxley and to him alone. The first glance magnetised his audience. The eyes were those of one accustomed to command, of one having authority, and not fearing on occasion to use it. The hair swept

carelessly away from the broad forehead and grew rather long behind, yet the length did not suggest, as it often does, effeminacy. He was masculine in everything—look, gesture, speech. Sparing of gesture, sparing of emphasis, careless of mere rhetorical or oratorical art, he had nevertheless the secret of the highest art of all, whether in oratory or whatever else—he had simplicity. The force was in the thought and the diction, and he needed no other. The voice was rather deep, low, but quite audible, at times sonorous, and always full. He used the chest-notes. His manner here, in the presence of this select and rather limited audience—for the theatre of the Royal Institution holds, I think, less than a thousand people—was exactly the same as before a great company whom he addressed at (Liverpool), as President of the British Association for the Advancement of Science. I remember going late to that, and having to sit far back, yet hearing every word easily; and there too the feeling was the same, that he had mastered his audience, taken possession of them, and held them to the end in an unrelaxing grip, as a great actor at his best does. There was nothing of the actor about him, except that he knew how to stand still, but masterful he ever was.

Up to the time of his last illness, he regularly breakfasted at eight, and avoided, as far as possible, going out to that meal, a "detestable habit" as he called it, which put him off for the whole day. He left the house about nine, and from that time till midnight at earliest was incessantly busy. His regular lectures involved an immensity of labour, for he would never make a statement in them which he had not personally verified by experiment. In the Jermyn Street days he habitually made preparations to illustrate the points on which he was lecturing, for his students had no laboratory in which to work out the things for themselves. His lectures to working-men also involved as much careful preparation as the more conspicuous discourses at the Royal Institution.

This thoroughness of preparation had no less effect on the teacher than on the taught. He writes to an old pupil:—

> It is pleasant when the "bread cast upon the water" returns after many days; and if the crumbs given in my lectures have had anything to do with the success on which I congratulate you, I am very glad.
>
> I used to say of my own lectures that if nobody else learned

anything from them, I did; because I always took a great deal of pains over them. But it is none the less satisfactory to find that there *were* other learners.

As for the ordinary course of a day's work, the more fitful energy and useless mornings of the earliest period in London were soon left behind. He was never one of those portentously early risers who do a fair day's work before other people are up; there was only one period, about 1873, when he had to be specially careful of his health, and, under Sir Andrew Clark's regime, took riding exercise for an hour each day before starting for South Kensington, that he records the fact of doing any work before breakfast, and that was letter-writing.

Much of the day during the session, and still more when his lectures were over, would thus be spent in original research, or in the examination and description of fossils in his official duty as Paleontologist to the Survey. As often as not, there would be a sitting of some Royal Commission to attend; committees of some learned society; meetings or dinners in the evening; if not, there would be an article to write or proofs to correct. Indeed, the greater part of the work by which the world knows him best was done after dinner, and after a long day's work in the lecture-room and laboratory.

He possessed a wonderful faculty for tearing out the heart of a book, reading it through at a gallop, but knowing what it said on all the points that interested him. Of verbal memory he had very little; in spite of all his reading I do not believe he knew half a dozen consecutive lines of poetry by heart. What he did know was the substance of what an author had written; how it fitted into his own scheme of knowledge; and where to find any point again when he wished to cite it.

In his biological studies his immense knowledge was firmly fixed in his mind by practical investigation; as is said above, he would take at second hand nothing for which he vouched in his teaching, and was always ready to repeat for himself the experiments of others, which determined questions of interest to him. The citations, analyses, maps, with which he frequently accompanied his reading, were all part of the

same method of acquiring facts and setting them in order within his mind. . So careful, indeed, was he in giving nothing at second hand, that one of his scientific friends reproached him with wasting his time upon unnecessary scientific work, to which competent investigators had already given the stamp of their authority. "Poor ——" was his comment afterwards, "if that is his own practice, his work will never live." On the literary side, he was omnivorous—consuming everything, as Mr. Spencer put it, from fairy tales to the last volume on metaphysics.

Unlike Darwin, to whom scientific research was at length the only thing engrossing enough to make him oblivious of his never-ending ill-health, to the gradual exclusion of other interests, literary and artistic, Huxley never lost his delight in literature or in art. He had a keen eye for a picture or a piece of sculpture, for, in addition to the draughtsman's and anatomist's sense of form, he had a strong sense of colour. To good music he was always susceptible.[1] He played no instrument; as a young man, however, he used to sing a little, but his voice, though true, was never strong. But he had small leisure to devote to art. On his holidays he would sometimes sketch with a firm and rapid touch. His illustrations to the *Cruise of the Rattlesnake* show what his untrained capacities were. But to go to a concert or opera was rare after middle life; to go to the theatre rarer still, much as he appreciated a good play. His time was too deeply mortgaged; and in later life, the deafness which grew upon him added a new difficulty.

In poetry he was sensitive both to matter and form. One school of modern poetry he dismissed as "sensuous caterwauling": a busy man, time and patience failed him to wade through the trivial discursiveness of so much of Wordsworth's verse; thus unfortunately he never realised the full value of a poet in whom the mass of ore bears so large a proportion to the pure metal. Shelley was too diffuse to be among his first favourites; but for simple beauty, Keats; for that, and for the comprehension of the

[1] To one breaking in upon him at certain afternoon hours in his room at South Kensington, "a whiff of the pipe" (writes Professor Howes), "and a snatch of some choice melody or a Bach's fugue, were the not infrequent welcome."

meaning of modern science, Tennyson; for strength and feeling, Browning as represented by his earlier poems. These were the favourites among the moderns. He knew his eighteenth-century classics, but knew better his Milton and his Shakespeare, to whom he turned with ever-increasing satisfaction, as men do who have lived a full life.

His early acquaintance with German had given him a lasting admiration of the greatest representatives of German literature, Goethe above all, in whose writings he found a moral grandeur to be ranked with that of the Hebrew prophets. Eager to read Dante in the original, he spent much of his leisure on board the *Rattlesnake* in making out the Italian with the aid of a dictionary, and in this way came to know the beauties of the *Divina Commedia*. On the other hand, it was a scientific interest which led him in later life to take up his Greek, though one use he put it to was to read Homer in the original.

Though he was a great novel-reader, and, as he grew older, would always have a novel ready to take up for a while in the evening, his chief reading, in German and French as well as English, was philosophy and history.

His recreations were, as a rule, literary, and consisted in a change of mental occupation. The only times I can remember his playing an outdoor game are in the late sixties, when he started his elder children at cricket on the common at Littlehampton, and in 1871 when he played golf at St. Andrews. When first married, he promised his wife to reserve Saturday afternoons for recreation, and constantly went with her to the Ella concerts. She persuaded him also to take exercise by playing fives with Mr. Herbert Spencer; but the pressure of work before long absorbed all his time. In his youth he was extremely fond of chess, and played eagerly with his fellow-students at Charing Cross Hospital or with his messmates on the *Rattlesnake*. But after he taught me the game, somewhere about 1869 or 1870, I do not think he ever found time for it again.

His principal exercise was walking during the holidays. In his earlier days especially, when overwrought by the stress of his life in London, he used to go off with a friend for a week's walking tour in Wales or the Lakes, in Brittany

or the Eifel country, or in summer for a longer trip to Switzerland. In this way he "burnt up the waste products," as he would say, of his town life, and came back fresh for a new spell of unintermittent work.

But, on the whole, the amount of exercise he took was insufficient for his bodily needs. Even the riding prescribed for him when he first broke down, became irksome, and was not continued very long, although his bodily machine was such as could only be kept in perfect working order by more exercise than he would give. His physique was not adapted to burn up the waste without special stimulus. I remember once, as he and I were walking up Beachy Head, we passed a man with a splendid big chest. "Ah," said my father regretfully, "if I had only had a chest like that, what a lot of work I could have done."

When, in 1872, he built his new house in Marlborough Place, my father bargained for two points; one, that each member of the family should have a corner of his or her own, where, as he used to say, it would be possible to "consume their own smoke"; the other, that the common living-rooms should be of ample size. Thus from 1874 onwards he was enabled to see something of his many friends who would come as far as St. John's Wood on a Sunday evening. No formal invitation for a special day was needed. The guests came, sometimes more, sometimes fewer, as on any ordinary at-home day. There was a simple informal meal at 6.30 or 7 o'clock, which called itself by no more dignified name than high tea—was, in fact, a cold supper with varying possibilities in the direction of dinner or tea. It was a chance medley of old and young—friends of the parents and friends of the children, but all ultimately centring round the host himself, whose end of the table never flagged for conversation, grave or gay.

Afterwards talk would go on in the drawing-room, or, on warm summer evenings, in the garden—nothing very extensive, but boasting a lawn with an old apple-tree at the further end, and in the borders such flowers and trees as endure London air. Later on, there was almost sure to be some music, to which my father himself was devoted. His daughters sang; a musical friend would be there; Mr.

Herbert Spencer, a frequent visitor, was an authority on music. Once only do I recollect any other form of entertainment, and that was an occasion when Sir Henry Irving, then not long established at the Lyceum, was present and recited "Eugene Aram" with great effect.

In his *London Letters* Mr. G. W. Smalley[1] has recorded his impressions of these evenings, at which he was often present :—

There used to be Sunday evening dinners and parties in Marlborough Place, to which people from many other worlds than those of abstract science were bidden; where talk was to be heard of a kind rare in any world. It was scientific at times, but subdued to the necessities of the occasion; speculative, yet kept within such bounds that bishop or archbishop might have listened without offence; political even, and still not commonplace; literary without pretence, and when artistic, free from affectation.

There and elsewhere Mr. Huxley easily took the lead if he cared to, or if challenged. Nobody was more ready in a greater variety of topics, and if they were scientific it was almost always another who introduced them. Unlike some of his comrades of the Royal Society, he was of opinion that man does not live by science alone, and nothing came amiss to him. All his life long he has been in the front of the battle that has raged between science and—not religion, but theology in its more dogmatic form. Even in private the alarm of war is sometimes heard, and Mr. Huxley is not a whit less formidable as a disputant across the table than with pen in hand. Yet an angry man must be very angry indeed before he could be angry with this adversary. He disarmed his enemies with an amiable grace that made defeat endurable if not entirely delightful.

As for his method of handling scientific subjects in conversation :—

He has the same quality, the same luminous style of exposition, with which his printed books have made all readers in America and England familiar. Yet it has more than that. You cannot listen to him without thinking more of the speaker than of his science, more of the solid beautiful nature than of the intellectual gifts, more of his manly simplicity and sincerity than of all his knowledge and his long services.

But his personality left the deepest impression, perhaps,

[1] Another interesting account from the same pen is to be found in the article "Mr. Huxley," *Scribner's Magazine*, October 1895.

upon those who studied under him and worked with him longest, before taking their place elsewhere in the front ranks of biological science.

With him (Professor A. Hubrecht[1] writes), we his younger disciples, always felt that in acute criticism and vast learning nobody surpassed him, but still what we yet more admired than his learning was his wisdom. It was always a delight to read any new article or essay from his pen, but it was an ever so much higher delight to hear him talk for five minutes. His was the most beautiful and the most manly intellect I ever knew of.

So, too, Professor E. Ray Lankester :—

There has been no man or woman whom I have met on my journey through life, whom I have loved and regarded as I have him, and I feel that the world has shrunk and become a poor thing, now that his splendid spirit and delightful presence are gone from it. Ever since I was a little boy he has been my ideal and hero.

While the late Jeffery Parker concludes his Recollections with these words :—

Whether a professor is usually a hero to his demonstrator I cannot say; I only know that, looking back across an interval of many years and a distance of half the circumference of the globe, I have never ceased to be impressed with the manliness and sincerity of his character, his complete honesty of purpose, his high moral standard, his scorn of everything mean or shifty, his firm determination to speak what he held to be truth at whatever cost of popularity. And for these things "I loved the man, and do honour to his memory, on this side idolatry, as much as any."

Even those who scarcely knew him apart from his books, underwent the influence of that "determination to speak what he held to be truth." I may perhaps be allowed to quote in illustration two passages from letters to myself—one written by a woman, the other by a man :—

"'The surest-footed guide' is exactly true, to my feeling. Everybody else, among the great, used to disappoint one somewhere. He—never!"

"He was so splendidly brave that one can never repay one's debt to him for his example. He made all pretence about religious belief, and the kind of half-thinking things out, and putting up in a slovenly way with half-formed conclusions, seem the base thing which it really is."

[1] Of Utrecht University.

CHAPTER XXV

1895

I HAVE often regretted that I did not regularly take notes of my father's conversation, which was striking, not so much for the manner of it—though that was at once copious and crisp, —as for the strength and substance of what he said. Yet the striking fact, the bit of philosophy, the closely knitted argument, were perfectly unstudied, and as in other most interesting talkers, dropped into the flow of conversation as naturally as would the more ordinary experiences of less richly stored minds.

However, in January 1895 I was staying at Eastbourne, and jotted down several fragments of talk as nearly as I could recollect them. Conversation not immediately noted down I hardly dare venture upon, save perhaps such an unforgettable phrase as this, which I remember his using one day as we walked on the hills near Great Hampden :— "It is one of the most saddening things in life that, try as we may, we can never be certain of making people happy, whereas we can almost always be certain of making them unhappy."

January 16.—At lunch he spoke of Dr. Louis Robinson's experiments upon simian characteristics in new-born children. He himself had called attention before to the incurved feet of infants, but the power of hanging by the hands was a new and important discovery.[1]

[1] Professor H. F. Osborn tells this story of his :—"When a fond mother calls upon me to admire her baby, I never fail to respond; and while cooing appropriately, I take advantage of an opportunity to gently ascertain whether the soles of its feet turn in, and tend to support my theory of arboreal descent."

He expressed his disgust with a certain member of the Psychical Research Society for his attitude towards spiritualism: "He doesn't believe in it, yet lends it the cover of his name. He is one of the people who talk of the 'possibility' of the thing, who think the difficulties of disproving a thing as good as direct evidence in its favour."

He thought it hard to be attacked for "the contempt of the man of science" when he was dragged into debate by Mr. Andrew Lang's *Common Sense and the Cock Lane Ghost*, he saying in a very polite letter: "I am content to leave Mr. Lang the Cock Lane Ghost if I may keep common sense." "After all," he added, "when a man has been through life and made his judgments, he must have come to a decision that there are some subjects it is not worth while going into."

January 18.—I referred to an article in the last *Nineteenth Century*, and he said:—"As soon as I saw it, I wrote, 'Knowles, my friend, you don't draw me this time. If a man goes on attributing statements to me which I have shown over and over again—giving chapter and verse—to be the contrary of what I did say, it is no good saying any more.'"

But would not this course of silence leave the mass of the British public believing the statements of the writer?

"The mass of the public will believe in ten years precisely the opposite of what they believe now. If a man is not a fool, it does him no harm to be believed one. If he really is a fool, it does matter. There never was book so derided and scoffed at as my first book, *Man's Place in Nature*, but it was true, and I don't know I was any the worse for the ridicule.

"People call me fond of controversy, but, as a fact, for the last twenty years at all events, I have never entered upon a controversy without some further purpose in view. As to Gladstone and his *Impregnable Rock*, it wasn't worth attacking them for themselves; but it was most important at that moment to shake him in the minds of sensible men.

"The movement of modern philosophy is back towards the position of the old Ionian philosophers, but strengthened and clarified by sound scientific ideas. If I publish my

criticism on Comte, I should have to re-write it as a summary of philosophical ideas from the earliest times. The thread of philosophical development is not on the lines usually laid down for it. It goes from Democritus and the rest to the Epicureans, and then the Stoics, who tried to reconcile it with popular theological ideas, just as was done by the Christian Fathers. In the Middle Ages it was entirely lost under the theological theories of the time; but reappeared with Spinoza, who, however, muddled it up with a lot of metaphysics which made him almost unintelligible.

"Plato was the founder of all the vague and unsound thinking that has burdened philosophy, deserting facts for possibilities, and then, after long and beautiful stories of what might be, telling you he doesn't quite believe them himself.

"A certain time since it was heresy to breathe a word against Plato; but I have a nice story of Sir Henry Holland. He used to have all the rising young men to breakfast, and turn out their latest ideas. One morning I went to breakfast with him, and we got into very intimate conversation, when he wound up by saying, 'In my opinion Plato was an ass! But don't tell any one I said so.'"

We talked on geographical teaching; he began by insisting on the need of a map of the earth (on the true scale) showing the insignificance of all elevations and depressions on the surface. Secondly, one should take any place as centre, and draw about it circles of 50 or 100 miles radius, and see what lies within them; and note the extent of the influence exerted by the central point. At the same time, one should always compare the British Isles to scale. For instance, the Ægean is about as big as Britain; while the smallness of Judæa is remarkable. After the Exile, the Jewish part was about as big as the county of Gloucester. How few boys realise this, though they are taught classical geography.

"The real chosen people were the Greeks. One of the most remarkable things about them is not only the smallness, but the late rise of Attica, whereas Magna Græcia flourished in the eighth century. The Greeks were doing everything

—piracy, trade, fighting, expelling the Persians. Never was there so large a number of self-governing communities.

"They fell short of the Jews in morality. How curious is the tolerant attitude of Socrates, like a modern man of the world talking to a young fellow who runs after the girls. The Jew, however he fell short in other respects, set himself a certain standard in cleanliness of life, and would not fall below it. The more creditable to him, because these vices were the offspring of the Semitic races among whom the Jew lived.

"There is a curious similarity between the position of the Jew in ancient times and what it is now. They were procurers and usurers among the Gentiles, yet many of them were singularly high-minded and pure. All too with an intense clannishness, the secret of their success, and a sense of superiority to the Gentile which would prevent the meanest Jew from sitting at table with a proconsul.

"The most remarkable achievement of the Jew was to impose on Europe for eighteen centuries his own superstitions—his ideas of the supernatural. Jahveh was no more than Zeus or Milcom; yet the Jew got established the belief in the inspiration of his Bible and his Law. If I were a Jew, I should have the same contempt as he has for the Christian who acted in this way towards me, who took my ideas and scorned me for clinging to them."

January 21.—Yesterday evening he again declared that it was very hard for a man of peace like himself to have been dragged into so many controversies. "I declare that for the last twenty years I have never attacked, but always fought in self-defence, counting Darwin, of course, as part of myself, for dear Darwin never could nor would defend himself. Before that, I admit I attacked ——, but I could not trust the man." A pause. "No, there was one other case, when I attacked without being directly assailed, and that was Gladstone. But it was good for other reasons. It has always astonished me how a man after fifty or sixty years of life among men could be so ignorant of the best way to handle his materials. If he had only read Dana, he would have found his case much better stated than ever he stated it. He seemed never to have read the leading authorities on his own side."

Speaking of the hesitation shown by the Senate of London University in grappling with a threatened obstacle to reform, he remarked: "It is very strange how most men will do anything to evade responsibility."

January 23.—At dinner the talk turned on plays. Mr. H. A. Jones had sent him *Judah*, which he thought good, though "there must be some hostility—except in the very greatest writers—between the dramatic and the literary faculties. I noticed many points I objected to, but felt sure they met with applause. Indeed in the theatre I have noticed that what I thought the worst blots on a piece invariably brought down the house."

He remarked how the French, in dramatic just as in artistic matters, are so much better than the English in composition, in avoiding anything slipshod in the details, though the English artists draw just as well and colour perhaps better.

The following sketch of human character is not actually a fragment of conversation, though it might almost pass for such; it comes from a letter to Mrs. W. K. Clifford, of February 10, 1895:—

> Men, my dear, are very queer animals, a mixture of horse-nervousness, ass-stubbornness and camel-malice—with an angel bobbing about unexpectedly like the apple in the posset, and when they can do exactly as they please, they are very hard to drive.

Whatever he talked of, his talk never failed to impress those who conversed with him. One or two such impressions have been recorded. Mr. Wilfrid Ward, whose interests lie chiefly in philosophy and theology, was his neighbour at Eastbourne, and in the *Nineteenth Century* for August 1896 has given various reminiscences of their friendly intercourse.

> His conversation (he writes) was singularly finished, and (if I may so express it), clean cut; never long-winded or prosy; enlivened by vivid illustrations. He was an excellent *raconteur*, and his stories had a stamp of their own which would have made them always and everywhere acceptable. His sense of humour and economy of words would have made it impossible, had he lived to ninety, that they should ever have been disparaged as symptoms of what has been called "anecdotage."

One drawback to conversation, however, he began to complain of during the later seventies.

It is a great misfortune (he remarked to Professor Osborn) to be deaf in only one ear. Every time I dine out the lady sitting by my good ear thinks I am charming, but I make a mortal enemy of the lady on my deaf side.

In ordinary conversation he never plunged at once into deep subjects. His welcome to the new-comer was always of the simplest and most unstudied. He had no mannerisms nor affectation of phrase. He would begin at once to talk on everyday topics ; an intimate friend he would perhaps rally upon some standing subject of persiflage. But the subsequent course of conversation adapted itself to his company. Deeper subjects were reached soon enough by those who cared for them ; with others he was quite happy to talk of politics or people or his garden, yet, whatever he touched, never failing to infuse into it an unexpected interest.

In this connection, a typical story was told me by a great friend of mine, whom we had come to know through his marriage with an early friend of the family. "Going to call at Hodeslea," he said, "I was in some trepidation, because I didn't know anything about science or philosophy ; but when your mother began to talk over old times with my wife, your father came across the room and sat down by me, and began to talk about the dog which we had brought with us. From that he got on to the different races of dogs and their origin and connections, all quite simply, and not as though to give information, but just to talk about something which obviously interested me. I shall never forget how extraordinarily kind it was of your father to take all this trouble in entertaining a complete stranger, and choosing a subject which put me at my ease at once, while he told me all manner of new and interesting things."

A few more fragments of his conversation have been preserved—the following by Mr. Wilfrid Ward. Speaking of Tennyson's conversation, he said :—

Doric beauty is its characteristic—perfect simplicity, without any ornament or anything artificial.

Telling how he had been to a meeting of the British Museum Trustees, he said :—

After the meeting, Archbishop Benson helped me on with my great-coat. I was *quite overcome* by this species of spiritual investiture. "Thank you, Archbishop," I said, "I feel as if I were receiving the *pallium*."

Speaking of two men of letters, with neither of whom he sympathised, he once said :—

Don't mistake me. One is a thinker and man of letters, the other is only a literary man. Erasmus was a man of letters, Gigadibs a literary man. A.B. is the incarnation of Gigadibs. I should call him *Gigadibsius Optimus Maximus*.

Another time, referring to Dean Stanley's historical impressionability, as militating against his sympathies with Colenso, he said :—

Stanley could believe in anything of which he had seen the supposed site, but was sceptical where he had not seen. At a breakfast at Monckton Milnes's, just at the time of the Colenso row, Milnes asked me my views on the Pentateuch, and I gave them. Stanley differed from me. The account of Creation in Genesis he dismissed at once as unhistorical; but the call of Abraham, and the historical narrative of the Pentateuch, he accepted. This was because he had seen Palestine—but he wasn't present at the Creation.

When he and Stanley met, there was sure to be a brisk interchange of repartee. One of these occasions, a ballot night at the Athenæum, has been recorded by the late Sir W. H. Flower :—

A well-known popular preacher of the Scotch Presbyterian Church, who had made himself famous by predictions of the speedy coming of the end of the world, was up for election. I was standing by Huxley when the Dean, coming straight from the ballot boxes, turned towards us. "Well," said Huxley, "have you been voting for C.?" "Yes, indeed I have," replied the Dean. "Oh, I thought the priests were always opposed to the prophets," said Huxley. "Ah!" replied the Dean, with that well-known twinkle in his eye, and the sweetest of smiles, "but you see, I do not believe in his prophecies, and some people say I am not much of a priest."

A few words as to his home life may perhaps be fitly introduced here. Towards his children he had the same union of underlying tenderness veiled beneath inflexible determination for what was right, which marked his intercourse with those outside his family.

As children we were fully conscious of this side of his character. We felt our little hypocrisies shrivel up before him; we felt a confidence in the infallible rectitude of his moral judgments which inspired a kind of awe. His arbitrament was instant and final, though rarely invoked, and was perhaps the more tremendous in proportion to its rarity. This aspect, as if of an oracle without appeal, was heightened in our minds by the fact that we saw but little of him. This was one of the penalties of his hard-driven existence. In the struggle to keep his head above water for the first fifteen or twenty years of his married life, he had scarcely any time to devote to his children. The "lodger," as he used to call himself at one time, who went out early and came back late, could sometimes spare half an hour just before or after dinner to draw wonderful pictures for the little ones, and these were memorable occasions. I remember that he used to profess a horror of being too closely watched, or of receiving suggestions, while he drew. "Take care, take care," he would exclaim, "or I don't know what it will turn into."

When I was seven years old I had the misfortune to be laid up with scarlet fever, and then his gift of drawing was a great solace to me. The solitary days—for I was the first victim in the family—were very long, and I looked forward with intense interest to one half-hour after dinner, when he would come up and draw scenes from the history of a remarkable bull-terrier and his family that went to the seaside in a most human and child-delighting manner. I have seldom suffered a greater disappointment than when, one evening, I fell asleep just before this fairy half-hour, and lost it out of my life.

In those days he often used to take the three eldest of us out for a walk on Sunday afternoons, sometimes to the Zoological Gardens, more often to the lanes and fields between St. John's Wood and Hampstead or West End. For then the flood of bricks and mortar ceased on the Finchley

Road just beyond the Swiss Cottage, and the West End Lane, winding solitary between its high hedges and rural ditches, was quite like a country road in holiday time, and was sometimes gladdened in June with real dog-roses, although the church and a few houses had already begun to encroach on the open fields at the end of the Abbey Road.

My father often used to delight us with sea stories and tales of animals, and occasionally with geological sketches suggested by the gravels of Hampstead Heath. But regular "shop" he would not talk to us, contrary to the expectation of people who have often asked me whether we did not receive quite a scientific training from his companionship.

At the Christmas dinner he invariably delighted the children by carving wonderful beasts, generally pigs, out of orange peel. When the marriage of his eldest daughter had taken her away from this important function, she was sent the best specimen as a reminder.

4 MARLBOROUGH PLACE,
Dec. 25, 1878.

DEAREST JESS—We have just finished the mid-day Christmas dinner, at which function you were badly wanted. The inflammation of the pudding was highly successful—in fact Vesuvian not to say Ætnaic—and I have never yet attained so high a pitch in piggygenesis as on this occasion.

The specimen I enclose, wrapped in a golden cerecloth, and with the remains of his last dinner in the proper region, will prove to you the heights to which the creative power of the true artist may soar. I call it a "Piggurne, or a Harmony in Orange and White."

Preserve it, my dear child, as evidence of the paternal genius, when those light and fugitive productions which are buried in the philosophical transactions and elsewhere are forgotten.

My best wishes to Fred and you, and may you succeed better than I do in keeping warm.—Ever your loving father,

T. H. HUXLEY.

Later on, however, the younger children who kept up the home at Marlborough Place after the elder ones had married or gone out into the world, enjoyed more opportunities of his ever-mellowing companionship. Strongly as he upheld the conventions when these represented some valid results of social experience, he was always ready to set aside

his mere likes and dislikes on good cause shown; to follow reason as against the mere prejudice of custom, even his own.

Severe he might be on occasion, but never harsh. His idea in bringing up his children was to accustom them as early as possible to a certain amount of independence, at the same time trying to make them regard him as their best friend.

This aspect of his character is specially touched upon by Mr. Leslie Stephen, in a letter written to my mother in July 1895:—

> No one, I think, could have more cordially admired Huxley's intellectual vigour and unflinching honesty than I. It pleases me to remember that I lately said something of this to him, and that he received what I said most heartily and kindly. But what now dwells most in my mind is the memory of old kindness, and of the days when I used to see him with you and his children. I may safely say that I never came from your house without thinking how good he is; what a tender and affectionate nature the man has! It did me good simply to see him. The recollection is sweet to me now, and I rejoice to think how infinitely better you know what I must have been dull indeed not more or less to perceive.

As he wrote to his son on his twenty-first birthday:—

> You will have a son some day yourself, I suppose, and if you do, I can wish you no greater satisfaction than to be able to say that he has reached manhood without having given you a serious anxiety, and that you can look forward with entire confidence to his playing the man in the battle of life. I have tried to make you feel your responsibilities and act independently as early as possible—but, once for all, remember that I am not only your father but your nearest friend, ready to help you in all things reasonable, and perhaps in a few unreasonable.

This domestic happiness which struck others so forcibly was one of the vital realities of his existence. Without it his quick spirit and nervous temperament could never have endured the long and often embittered struggle—not merely with equanimity, but with a constant growth of sympathy for earnest humanity, which, in early days obscured from view by the turmoil of strife, at length became apparent to all as the tide of battle subsided. None realised more than himself what the sustaining help and comradeship of married life

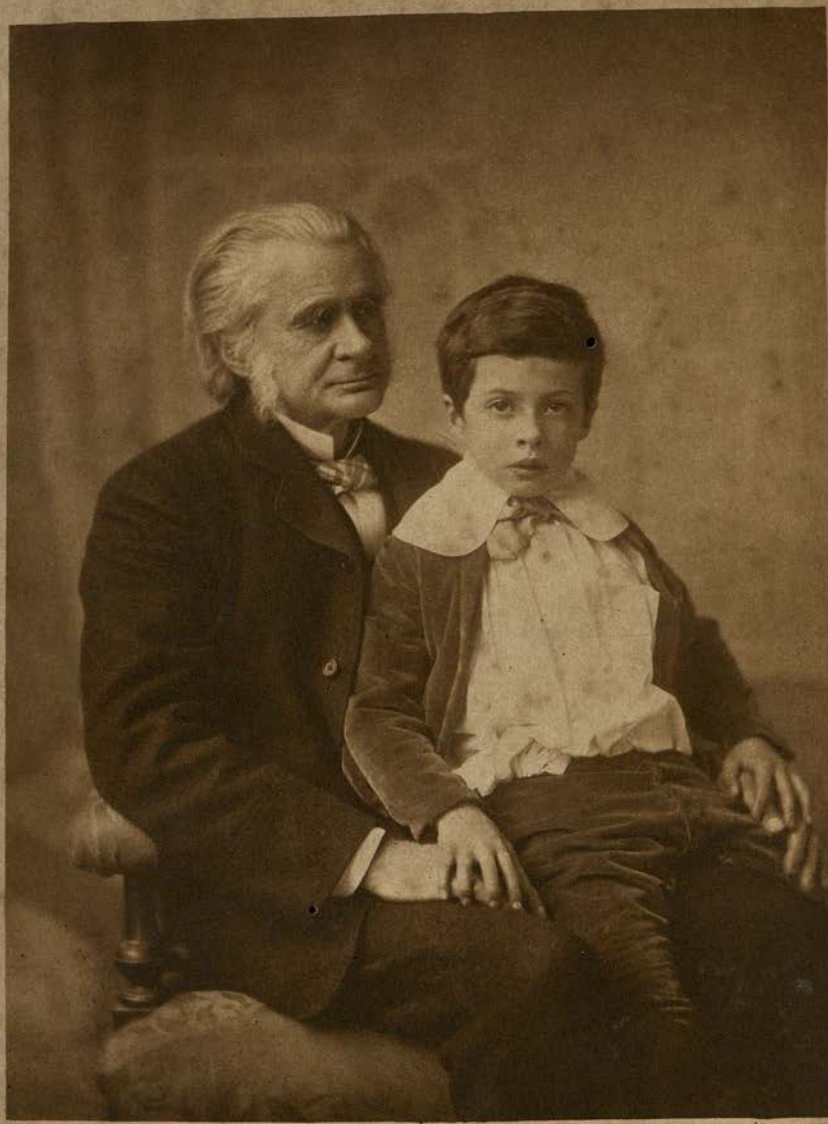
had wrought for him, alike in making his life worth living and in making his life's work possible. Here he found the pivot of his happiness and his strength; here he recognised to the full the care that took upon itself all possible burdens and left his mind free for his greater work.

He had always a great tenderness for children. "One of my earliest recollections of him," writes Jeffery Parker, "is in connection with a letter he wrote to my father, on the occasion of the death, in infancy, of one of my brothers. 'Why,' he wrote, 'did you not tell us before that the child was named after me, that we might have made his short life happier by a toy or two.' I never saw a man more crushed than he was during the dangerous illness of one of his daughters, and he told me that, having then to make an after-dinner speech, he broke down for the first time in his life, and for one painful moment forgot where he was and what he had to say. I can truly say that I never knew a man whose way of speaking of his family, or whose manner in his own home, was fuller of a noble, loving, and withal playful courtesy."

After he had retired to Eastbourne, his grandchildren reaped the benefit of his greater leisure. In his age his love of children brimmed over with undiminished force, unimpeded by circumstances. He would make endless fun with them, until one little mite, on her first visit, with whom her grandfather was trying to ingratiate himself with a vast deal of nonsense, exclaimed: "Well, you are the curious'test old man I ever seen."

Another, somewhat older, developed a great liking for astronomy under her grandfather's tuition. One day a visitor, entering unexpectedly, was astonished to find the pair of them kneeling on the floor in the hall before a large sheet of paper, on which the professor was drawing a diagram of the solar system on a large scale, with a little pellet and a large ball to represent earth and sun, while the child was listening with the closest attention to an account of the planets and their movements, which he knew so well how to make simple and precise without ever being dull.

Children seemed to have a natural confidence in the expression of mingled power and sympathy which, especially



M. Queen Sc.

T. H. Huxley with his grandson Julian.
From a photograph by Kent & Lacey, Eastbourne.
January 1893.

in his later years, irradiated his "square, wise, swarthy face,"[1] and proclaimed to all the sublimation of a broad native humanity tried by adversity and struggle in the pursuit of noble ends. It was the confidence that an appeal would not be rejected, whether for help in distress, or for the satisfaction of the child's natural desire for knowledge.

Spirit and determination in children always delighted him. His grandson Julian, a curly-haired rogue, alternately cherub and pickle, was a source of great amusement and interest to him. The boy must have been about four years old when my father one day came in from the garden, where he had been diligently watering his favourite plants with a big hose, and said: "I like that chap! I like the way he looks you straight in the face and disobeys you. I told him not to go on the wet grass again. He just looked up boldly, straight at me, as much as to say, 'What do *you* mean by ordering me about?' and deliberately walked on to the grass."

The disobedient youth who so charmed his grandfather's heart was the prototype of Sandy in Mrs. Humphry Ward's *David Grieve*. When the book came out my father wrote to the author: "We are very proud of Julian's apotheosis. He is a most delightful imp, and the way in which he used to defy me on occasion, when he was here, was quite refreshing. The strength of his conviction that people who interfere with his freedom are certainly foolish, probably wicked, is quite Gladstonian."

A year after, when Julian had learned to write, and was reading the immortal *Water Babies*, wherein fun is poked at his grandfather's name among the authorities on water-babies and water-beasts of every description, he greatly desired more light as to the reality of water-babies. There is a picture by Linley Sambourne, showing my father and Owen examining a bottled water-baby under big magnifying glasses. Here, then, was a real authority to consult. So he wrote a letter of enquiry, first anxiously asking his mother if he would receive in reply a "proper letter" that

[1] "There never was a face, I do believe" (wrote Sir Walter Besant of the portrait by John Collier), "wiser, more kindly, more beautiful for wisdom and the kindliness of it, than this of Huxley."—The *Queen*, Nov. 16, 1895.

he could read for himself, or a "wrong kind of letter" that must be read to him.

DEAR GRANDPATER—Have you seen a Waterbaby? Did you put it in a bottle? Did it wonder if it could get out? Can I see it some day?—Your loving JULIAN.

To this he received the following reply from his grandfather, neatly printed, letter by letter, very unlike the orderly confusion with which his pen usually rushed across the paper—time being so short for such a multitude of writing — to the great perplexity, often, of his foreign correspondents.

HODESLEA,
STAVELEY ROAD,
EASTBOURNE.

March 24
1892.

My dear Julian

I never could make
Sure about that Wate
Baby. I have seen
Babies in water and
Babies in bottles; but

the Baby in the water
was not in a bottle and
the Baby in the bottle was
not in water.
My friend who wrote the
story of the Water Baby,
was a very kind man
and very clever. Perhaps
he thought I could
see as much in the
water as he did—
There are some people

who see a great deal

and some who see very

little in the same things.

When you grow up

I dare say you will be

one of the great-deal seers

and see things more

wonderful than Water

Babies where other folks

can see nothing.

Give my best love to
Daddy + Mammy and
Trevenen - Grandmoo
is a little better but not
up yet -
Ever your loving
Grandpater

Others of his family would occasionally receive elaborate pieces of nonsense, of which I give a couple of specimens. The following is to his youngest daughter :—

ATHENÆUM CLUB,
May 17, 1892.

DEAREST BABS—As I was going along Upper Thames Street just now, I saw between Nos. 170 and 211 (but you would like to know what I was going along that odorous street for. Well, it was to enquire how the pen with which I am now writing—(you see it is a new-fangled fountain pen, warranted to cure the worst writing and always spell properly)—works, because it would not work properly

primary parenthesis
2nd p.
2nd p.

this morning. And the nice young woman who took it from me—
3rd p. 3rd p.
(as who should say you old foodle!) inked her own fingers enor-
4th p.
mously (which I told her I was pleased they were her fingers rather
4th p. 5th p.
than mine)—But she only smole. (Close by was another shop
6 or 7 p. n.p.
where they sold hose—(indiarubber, not knitted)—(and warranted to let water through, not keep it out); and I asked for a garden syringe, thinking such things likely to be kept by hosiers of that sort—and they said they had not any, but found they had a remnant
n.n.p.
cheap (price 3s.) which is less than many people pay for the other
end of pp.
hosiers' hose) a doorpost at the side of the doorway of some place of business with this remarkable notice: RULING GIRLS WANTED.

Don't you think you had better apply at once? Jack will give you a character, I am sure, on the side of the art of ruling, and I will speak for the science—also of hereditary (on mother's side) instinct.

Well I am not sure about the pen yet—but there is no room for any more.—Ever your loving DAD.

Epistolary composition on the model of a Gladstonian speech to a deputation on women's suffrage.

The other is to his daughter, Mrs. Harold Roller, who had sent him from abroad a friend's autograph-book for a signature:—

HODESLEA, EASTBOURNE,
Nov. 1, 1893.

The epistle of Thomas to the woman of the house of Harold.

1. I said it was an autograph-book; and so it was.
2. And naughty words came to the root of my tongue.
3. And the recording angel dipped his pen in the ink and squared his elbows to write.
4. But I spied the hand of the lovely and accomplished but vagabond daughter.
5. And I smole; and spoke not; nor uttered the naughty words.
6. So the recording angel was sold;
7. And was about to suck his pen.
8. But I said Nay! give it to me.
9. And I took the pen and wrote on the book of the Autographs letters pleasant to the eye and easy to read.
10. Such as my printers know not: nor the postman—nor the correspondent, who riseth in his wrath and curseth over my epistle ordinary.

This to his youngest daughter, which, in jesting form, conveys a good deal of sound sense, was the sequel to a discussion as to the advisability of a University education for her own and another boy :—

HODESLEA, EASTBOURNE,
May 9, 1892.

DEAREST BABS—Bickers and Son have abased themselves, and assure me that they have fetched the Dicty. away and are sending it here. I shall believe them when it arrives.

As a rule, I do not turn up when I announce my coming, but I believe I shall be with you about dinner-time on Friday next (13th).

In the meanwhile, my good daughter, meditate these things :

1. Parents not too rich wish to send exceptionally clever, energetic lad to university—before taking up father's profession of architect.

2. E.c.e.l. will be well taught classics at school—not well taught in other things—will easily get a scholarship either at school or university. So much in parents' pockets.

3. E.c.e.l. will get as much mathematics, mechanics, and other needful preliminaries to architecture, as he wants (and a good deal more if he likes) at Oxford. Excellent physical school there.

4. Splendid Art museums at Oxford.

5. Prigs not peculiar to Oxford.

6. Don Cambridge would choke science (except mathematics) if it could as willingly as Don Oxford and more so.

7. Oxford always represents English opinion, in all its extremes, better than Cambridge.

8. Cambridge better for doctors, Oxford for architects, poets, painters, ~~and all that sort of cattle~~.

9. *Lawrence will go to Oxford* and become a real scholar, which is a great thing and a noble. He will combine the new and the old, and show how much better the world would have been if it had stuck to Hellenism. You are dreaming of the schoolboy who does not follow up his work, or becomes a mere poll man. Good enough for parsons, not for men. *Lawrence will go to Oxford.*

—Ever your aggrawatin' PA.

Like the old Greek sage and statesman, my father might have declared that old age found him ever learning. Not indeed with the fiery earnestness of his young days of stress and storm; but with the steady advance of a practised worker who cannot be unoccupied. History and

philosophy, especially biblical criticism, composed his chief reading in these later years.

Fortune had ceased her buffets; broken health was restored; and from his resting-place among his books and his plants he watched keenly the struggle which had now passed into other hands, still ready to strike a blow if need be, or even, on rare occasions, to return to the fighting line, as when he became a leader in the movement for London University reform.

His days at Eastbourne, then, were full of occupation, if not the occupation of former days. The day began as early; he never relaxed from the rule of an eight o'clock breakfast. Then a pipe and an hour and a half of letter-writing or working at an essay. Then a short expedition around the garden, to inspect the creepers, tend the saxifrages, or see how the more exposed shrubs could best be sheltered from the shrivelling winds. The gravelled terrace immediately behind the house was called the Quarterdeck; it was the place for a brisk patrolling in uncertain weather or in a north wind. In the lower garden was a parallel walk protected from the south by a high double hedge of cypress and golden elder, designed for shelter from the summer sun and southerly winds.

Then would follow another spell of work till near one o'clock; the weather might tempt him out again before lunch; but afterwards he was certain to be out for an hour or two from half-past two. However hard it blew, and Eastbourne is seldom still, the tiled walk along the sea-wall always offered the possibility of a constitutional. But the high expanse of the Downs was his favourite walk. The air of Beachy Head, 560 feet up, was an unfailing tonic. In the summer he used to keep a look-out for the little flowers of the short, close turf of the chalk which could remind him of his Alpine favourites, in particular the curious phyteuma; and later on, in the folds of the hills where he had marked them, the English gentians.

After his walk, a cup of tea was followed by more reading or writing till seven; after dinner another pipe, and then he would return to my mother in the drawing-room, and settle down in his particular arm-chair, with some tough

volume of history or theology to read, every now and again scoring a passage for future reference, or jotting a brief note on the margin. At ten he would migrate to the study for a final smoke before going to bed.

Such was his routine, broken by occasional visits to town on business, for he was still Dean of the Royal College of Science and a trustee of the British Museum. Old friends came occasionally to stay for a few days, and tea-time would often bring one or two of the small circle of friends whom he had made in Eastbourne. These also he occasionally visited, but he scarcely ever dined out. The talking was too tiring.

The change to Eastbourne cut away a whole series of interests, but it imported a new and very strong one into my father's life. His garden was not only a convenient ambulatory, but, with its growing flowers and trees, became a novel and intense pleasure, until he began "to think with Candide that 'Cultivons notre jardin' comprises the whole duty of man."

It was strange that this interest should have come suddenly at the end of his life. Though he had won the prize in Lindley's botanical class he had never been a field botanist till he was attracted by the Swiss gentians. As has been said before, his love of nature had never run to collecting either plants or animals. Mere "spider-hunters and hay-naturalists," as a German friend called them, he was inclined to regard as the camp-followers of science. It was the engineering side of nature, the unity of plan of animal construction, worked out in infinitely varying detail, which engrossed him. Walking once with Hooker in the Rhone valley, where the grass was alive with red and green grass-hoppers, he said, "I would give anything to be as interested in them as you are."

But this feeling, unknown to him before, broke out in his gentian work. He told Hooker, "I can't express the delight I have in them." It continued undiminished when once he settled in the new house and laid out a garden. His especial love was for the rockery of Alpines, many of which came from Sir J. Hooker.

Here, then, he threw himself into gardening with

characteristic ardour. He described his position as a kind of mean between the science of the botanist and the empiricism of the working gardener. He had plenty to suggest, but his gardener, like so many of his tribe, had a rooted mistrust of any gardening lore culled from books. "Books? They'll say anything in them books." And he shared, moreover, that common superstition, perhaps really based upon a question of labour, that watering of flowers, unnecessary in wet weather, is actively bad in dry. So my father's chief occupation in the garden was to march about with a long hose, watering, and watering especially his alpines in the upper garden and along the terraces lying below the house. The saxifrages and the creepers on the house were his favourite plants. When he was not watering the one he would be nailing up the other, for the winds of Eastbourne are remarkably boisterous, and shrivel up what they do not blow down. "I believe I shall take to gardening," he writes, a few months after entering the new house, "if I live long enough. I have got so far as to take a lively interest in the condition of my shrubs, which have been awfully treated by the long cold."

From this time his letters contain many references to his garden. He is astonished when his gardener asks leave to exhibit at the local show, but delighted with his pluck. Hooker jestingly sends him a plant "which will flourish on any dry, neglected bit of wall, so I think it will just suit you."

> Great improvements have been going on (he writes in 1892), and the next time you come you shall walk in the "avenue" of four box-trees. Only five are to be had for love or money at present, but there are hopes of a sixth, and then the "avenue" will be full ten yards long! *Figurez vous ça!*

It was of this he wrote on October 1:—

> Thank Heaven we are settled down again and I can vibrate between my beloved books and even more beloved saxifrages.
>
> The additions to the house are great improvements every way, outside and in, and when the conservatory is finished we shall be quite palatial; but, alas, of all my box-trees only one remains green, that is the "amari," or more properly "fusci" aliquid.

Sad things will happen, however. Although the local

florists vowed that the box-trees would not stand the winds of Eastbourne, he was set on seeing if he could not get them to grow despite the gardeners, whom he had once or twice found false prophets. But this time they were right. Vain were watering and mulching and all the arts of the husbandman. The trees turned browner and browner every day, and the little avenue from terrace to terrace had to be ignominously uprooted and removed.

A sad blow this, worse even than the following :—

A lovely clematis in full flower, which I had spent hours in nailing up, has just died suddenly. I am more inconsolable than Jonah!

He answers some gardening chaff of Sir Michael Foster's :—

Wait till I cut you out at the Horticultural. I have not made up my mind what to compete in yet. Look out when I do!

And when the latter offered to propose him for that Society, he replied :—

Proud an' 'appy should I be to belong to the Horticultural if you will see to it. Could send specimens of nailing up creepers if qualification is required.

After his long battlings for his early loves of science and liberty of thought, his later love of the tranquil garden seemed in harmony with the dignified rest from struggle. To those who thought of the past and the present, there was something touching in the sight of the old man whose unquenched fires now lent a gentler glow to the peaceful retirement he had at length won for himself. His latter days were fruitful and happy in their unflagging intellectual interests, set off by the new delights of the *succidia altera*, that second resource of hale old age for many a century.

All through his last and prolonged illness, from earliest spring until midsummer, he loved to hear how the garden was getting on, and would ask after certain flowers and plants. When the bitter cold spring was over and the warm weather came, he spent most of the day outside, and even recovered so far as to be able to walk once into the lower garden and visit his favourite flowers. These children of his old age helped to cheer him to the last.

APPENDIX I

As for this unfinished work, suggestive outlines left for others to fill in, Professor Howes writes to me in October 1899 :—

Concerning the papers at S.K. which, as part of the contents of your father's book-shelves, were given by him to the College, and now are arranged, numbered, and registered in order for use, there is evidence that in 1858 he, with his needles and eyeglass, had dissected and carefully figured the so-called pronephros of the Frog's tadpole, in a manner which as to accuracy of detail anticipated later discovery. Again, in the early '80's, he had observed and recorded in a drawing the præ-pulmonary aortic arch of the Amphibian, at a period antedating the researches of Boas, which in connection with its discovery placed the whole subject of the morphology of the pulmonary artery of the vertebrata on its final basis, and brought harmony into our ideas concerning it.

Both these subjects lie at the root of modern advances in vertebrate morphology.

Concerning the skull, he was in the '80's back to it with a will. His line of attack was through the lampreys and hags and the higher cartilaginous fishes, and he was following up a revolutionary conception (already hinted at in his Hunterian Lectures in 1864, and later in a Royal Society paper on *Amphioxus* in 1875), that the trabeculæ cranii, judged by their relationships to the nerves, may represent a pair of præ-oral visceral arches. In his unpublished notes there is evidence that he was bringing to the support of this conclusion the discovery of a supposed 4th branch to the trigeminal nerve—the relationships of this (which he proposed to term the "hyporhinal" or palato-nasal division) and the ophthalmic (to have been termed the "orbitonasal"[1]) to the trabecular arch and a supposed præ-mandibular visceral cleft, being regarded as repetitional of those of the maxillary and mandibular divisions to the mandibular cleft. So far as I am aware, von Kupffer is the only observer who has given this startling conclusion support, in his famous

[1] A term already applied by him in 1875 to the corresponding nerve in the Batrachia. (*Ency. Brit.* 9th edition, vol. i., art. "Amphibia.")

Studien (Hf. I. Kopf Acipenser, München, 1893), and from the nature of other recent work on the genesis of parts of the cranium hitherto thought to be wholly trabecular in origin, it might well be further upheld. As for the discovery of the nerve, I have been lately much interested to find that Mr. E. Phelps Allis, jun., an investigator who has done grand work in Cranial Morphology, has recently and independently arrived at a similar result. It was while working in my laboratory in July last that he mentioned the fact to me. Remembering that your father had published the aforementioned hints on the subject, and recalling conversations I had with him, it occurred to me to look into his unpublished MSS. (then being sorted), if perchance he had gone further. And, behold! there is a lengthy attempt to write the matter up in full, in which, among other things, he was seeking to show that, on this basis, the mode of termination of the notochord in the Craniata, and in the Branchiortomidæ (in which the trabecular arch is undifferentiated), is readily explained. Mr. Allis's studies are now progressing, and I have arranged with him that if, in the end, his results come sufficiently close to your father's, he shall give his work due recognition and publicity.

Among his schemes of the early '80's, there was actually commenced a work on the principles of Mammalian Anatomy and an Elementary Treatise on the Vertebrata. The former exists in the shape of a number of drawings with very brief notes, the latter to a slight extent only in MS. In the former, intended for the medical student and as a means of familiarising him with the anatomical "tree" as distinct from its surgical "leaves," your father once again returned to the skull, and he leaves a scheme for a revised terminology of its nerve exits worthy his best and most clear-headed endeavours of the past.[1] And well do I remember how, in the '80's, both in the class-room and in conversation, he would emphasise the fact that the hypoglossus nerve roots of the mammal arise serially with the ventral roots of the spinal nerves, little thinking that the discovery by Froriep, in 1886, of their dorsal ganglionated counterparts, would establish the actual homology between the two, and by leading to the conclusion that though actual vertebræ do not contribute to the formation of the mammalian skull, its

[1] Concerning this he wrote to Professor Howes in 1890 when giving him permission to denote two papers which he was about to present to the Zoological Society, as the first which emanated from the Huxley Research Laboratory:—"Pray do as you think best about the nomenclature. I remember when I began to work at the skull it seemed a hopeless problem, and years elapsed before I got hold of the clue."

And six weeks later, he writes:—"You are always welcome to turn anything of mine to account, though I vow I do not just now recollect anything about the terms you mention. If you were to examine me in my own papers I believe I should be plucked."

occipital region is of truncal origin, mark the most revolutionary advance in cranial morphology since his own of 1856.

Much of the final zoological work of his life lay with the Bony Fishes, and he leaves unfinished (indeed only just commenced) a memoir embodying a new scheme of classification of these, which shows that he was intending to do for them what he did for Birds in the most active period of his career. It was my good fortune to have helped as a hodman in the study of these creatures, with a view to a Text-book we were to have written conjointly, and as I realise what he was intending to make out of the dry facts, I am filled with grief at the thought of what we must have lost. His classification was based on the labours of years, as testified by a vast accumulation of rough notes and sketches, and as a conspicuous feature of it there stands the embodiment under one head of all those fishes having the swim-bladder in connection with the auditory organ by means of a chain of ossicles—a revolutionary arrangement, which later, in the hands of the late Dr. Sagemähl, and by his introduction of the famous term—"Ostariophyseæ," has done more than all else of recent years to clear the Ichthyological air. Your father had anticipated this unpublished, and in a proposal to unite the Herrings and Pikes into a single group, the "Clupesoces," he had further given promise of a new system, based on the study of the structure of the fins, jaws, and reproductive organs of the Bony Fishes, the classifications of which are still largely chaotic, which would have been as revolutionary as it was rational. New terms both in taxonomy and anatomy were contemplated, and in part framed. His published terms "Elasmo-" and "Cysto-arian" are the adjective form of two—far-reaching and significant—which give an idea of what was to have come. Similarly, the spinose fin-rays were to have been termed "*acanthonemes*," the branching and multiarticulate "*arthronemes*," and those of the more elementary and "adipose fin" type "*protonemes*": and had he lived to complete the task, I question whether it would not have excelled his earlier achievements.

The Rabbit was to have been the subject of the first of the afore-mentioned books, and in the desire to get at the full meaning of problems which arose during its progress, he was led to digress into a general anatomical survey of the Rodentia, and in testimony to this there remain five or six books of rough notes bearing dates 1880 to 1884, and a series of finished pencil-drawings, which, as works of art and accurate delineations of fact, are among the most finished productions of his hand. In the same manner his contemplated work upon the Vertebrata led him during 1879-1880 to renewed investigation of the anatomy of some of the more aberrant orders. Especially as concerning the Marsupialia and Edentata was this the case, and to the end in view he secured

living specimens of the Vulpine Phalanger, and purchased of the Zoological Society the Sloths and Ant-eaters which during that period died in their Gardens. These he carefully dissected, and he leaves among his papers a series of incomplete notes (fullest as concerning the Phalanger and Cape Ant-eater [*Orycteropus*][1]), which were never finished up.

They prove that he intended the production of special monographs on the anatomy of these peculiar mammalian forms, as he did on members of other orders which he had less fully investigated, and on the more important groups of fishes alluded to in the earlier part of my letter; and there seems no doubt, from the collocation of dates and study of the order of the events, that his memorable paper "On the Application of the Laws of Evolution to the arrangement of the Vertebrata, and more particularly of the Mammalia," published in the *Proc. Zool. Soc.* for 1880,—the most masterly among his scientific theses—was the direct outcome of this intention, the only expression which he gave to the world of the interaction of a series of revolutionary ideas and conceptions (begotten of the labours of his closing years as a working zoologist) which were at the period assuming shape in his mind. They have done more than all else of their period to rationalise the application of our knowledge of the Vertebrata, and have now left their mark for all time on the history of progress, as embodied in our classificatory systems.

He was in 1882 extending his important observations upon the respiratory apparatus from birds to reptiles, with results which show him to have been keenly appreciative of the existence of fundamental points of similarity between the Avian and Chelonian types—a field which has been more recently independently opened up by Milani.

Nor must it be imagined that after the publication of his ideal work on the Crayfishes in 1880, he had forsaken the Invertebrata. On the contrary, during the late '70's, and on till 1882, he accumulated a considerable number of drawings (as usual with brief notes), on the Mollusca. Some are rough, others beautiful in every respect, and among the more conspicuous outcomes of the work are some detailed observations on the nervous system, and an attempt to formulate a new terminology of orientation of the Acephalous Molluscan body. The period embraces that of his research upon the *Spirula* of the *Challenger* expedition, since published; and incidentally to this he also accumulated a series of valuable drawings, with explanatory notes, of Cephalopod anatomy, which, as accurate records of fact, are unsurpassed.

[1] I was privileged to assist in the dissection of the latter animal, and well do I remember how, when by means of a blow-pipe he had inflated the bladder, intent on determining its limit of distensibility, the organ burst, with unpleasant results, which called forth the remark, "I think we'll leave it at that!"

As you are aware, he was practically the founder of the Anthropological Institute. Here again, in the late '60's and early '70's, he was most clearly contemplating a far-reaching inquiry into the physical anthropology of all races of mankind. There remain in testimony to this some 400 to 500 photographs (which I have had carefully arranged in order and registered), most of them of the nude figure standing erect, with the arm extended against a scale. A desultory correspondence proves that in connection with these he was in treaty with British residents and agents all over the world, with the Admiralty and naval officers, and that all was being done with a fixed idea in view. He was clearly contemplating something exhaustive and definite which he never fulfilled, and the method is now the more interesting from its being essentially the same as that recently and independently adopted by Mortillet.

Beyond this, your father's notes reveal numerous other indications of matters and phases of activity, of great interest in their bearings on the history and progress of contemporary investigation, but these are of a detailed and wholly technical order.

APPENDIX II

His administrative work as an officer of the Royal Society is described in the following note by Sir Joseph Hooker :—

Mr. Huxley was appointed Joint-Secretary of the Royal Society, November 30, 1871, in succession to Dr. Sharpey, Sir George Airy being President, and Professor (now Sir George) Stokes, Senior Secretary. He held the office till November 30, 1880. The duties of the office are manifold and heavy; they include attendance at all the meetings of the Fellows, and of the councils, committees, and sub-committees of the Society, and especially the supervision of the printing and illustrating all papers on biological subjects that are published in the Society's Transactions and Proceedings: the latter often involving a protracted correspondence with the authors. To this must be added a share in the supervision of the staff of officers, of the library and correspondence, and the details of house-keeping.

The appointment was well-timed in the interest of the Society, for the experience he had obtained as an officer in the Surveying Expedition of Captain Stanley rendered his co-operation and advice of the greatest value in the efforts which the Society had recently commenced to induce the Government, through the Admiralty especially, to undertake the physical and biological exploration of the ocean. It was but a few months before his appointment that he had been placed upon a committee of the Society, through which

H.M.S. *Porcupine* was employed for this purpose in the European seas, and negotiations had already been commenced with the Admiralty for a voyage of circumnavigation with the same objects, which eventuated in the *Challenger* Expedition.

In the first year of his appointment, the equipment of the *Challenger*, and selection of its officers, was entrusted to the Royal Society, and in the preparation of the instructions to the naturalists Mr. Huxley had a dominating responsibility. In the same year a correspondence commenced with the India Office on the subject of deep-sea dredging in the Indian Ocean (it came to nothing), and another with the Royal Geographical Society on that of a North Polar Expedition, which resulted in the Nares Expedition (1875). In 1873, another with the Admiralty on the advisability of appointing naturalists to accompany two of the expeditions about to be despatched for observing the transit of Venus across the sun's disk in Mauritius and Kerguelen, which resulted in three naturalists being appointed. Arduous as was the correspondence devolving on the Biological Secretary, through the instructing and instalment of these two expeditions, it was as nothing compared with the official, demi-official, and private, with the Government and individuals, that arose from the Government request that the Royal Society should arrange for the publication and distribution of the enormous collections brought home by the above-named expedition. It is not too much to say that Mr. Huxley had a voice in every detail of these publications. The sittings of the Committee of Publication of the *Challenger* Expedition collections (of which Sir J. D. Hooker was chairman, and Mr. Huxley the most active member) were protracted from 1876 to 1895, and resulted in the publication of fifty royal quarto volumes, with plates, maps, sections, etc., the work of seventy-six authors, every shilling of the expenditure on which (some £50,000) was passed under the authority of the Committee of Publication.

Nor was Mr. Huxley less actively interested in the domestic affairs of the Society. In 1873 the whole establishment was translated from the building subsequently occupied by the Royal Academy to that which it now inhabits in the same quadrangle; a flitting of library stuff and appurtenances involving great responsibilities on the officers for the satisfactory re-establishment of the whole institution. In 1874 a very important alteration of the bye-laws was effected, whereby that which gave to Peers the privilege of being proposed for election as Fellows, without previous selection by the Committee (and to which bye-laws, as may be supposed, Mr. Huxley was especially repugnant), was replaced by one restricting that privilege to Privy Councillors. In 1875 he actively supported a proposition for extending the interests taken in the Society by holding annually a reception, to which the lady friends of the Fellows

who were interested in science should be invited to inspect an exhibition of some of the more recent inventions, appliances and discoveries in science. And in the same year another reform took place in which he was no less interested, which was the abolition of the entrance fees for ordinary Fellows, which had proved a bar to the coming forward of men of small incomes, but great eminence. The loss of income to the Society from this was met by a subscription of no less than £10,666, raised almost entirely amongst the Fellows themselves for the purpose.

In 1876 a responsibility, that fell heavily on the Secretaries, was the allotment annually of a grant by the Treasury of £4000, to be expended, under the direction of the Royal[1] and other learned societies, on the advancement of science. Every detail of the business of this grant is undertaken by a large committee of the Royal and other scientific societies, which meets in the Society's rooms, and where all the business connected with the grant is conducted and the records kept.

APPENDIX III

LIST OF ESSAYS, BOOKS, AND SCIENTIFIC MEMOIRS BY T. H. HUXLEY

ESSAYS

"The Darwinian Hypothesis." (*Times*, December 26, 1859.) *Collected Essays*, ii.

"On the Educational Value of the Natural History Sciences." (An Address delivered at St. Martin's Hall, on July 22, 1854, and published as a pamphlet in that year.) *Lay Sermons; Collected Essays*, iii.

"Time and Life." (*Macmillan's Magazine*, December 1859.)

"The Origin of Species." (*The Westminster Review*, April 1860.) *Lay Sermons; Collected Essays*, ii.

"A Lobster: or the Study of Zoology." (A Lecture delivered at the South Kensington Museum in 1861, and subsequently published by the Department of Science and Art. Original title, "On the Study of Zoology.") *Lay Sermons; Collected Essays*, viii.

"Geological Contemporaneity and Persistent Types of Life." (The Anniversary Address to the Geological Society for 1862.) *Lay Sermons; Collected Essays*, viii.

"Six Lectures to Working Men on Our Knowledge of the Causes

[1] It is often called a grant to the Royal Society. This is an error. The Royal Society, as such, in no way participates in this grant. The Society makes grants from funds in its own possession only.

of the Phenomena of Organic Nature, 1863." *Collected Essays*, ii.

"Man's Place in Nature," *see* List of Books. Republished, *Collected Essays*, vii.

"Criticisms on 'The Origin of Species.'" (The *Natural History Review*, 1864.) *Lay Sermons; Collected Essays*, ii.

"Emancipation—Black and White." (The *Reader*, May 20, 1865.) *Lay Sermons; Collected Essays*, iii.

"On the Methods and Results of Ethnology." (The *Fortnightly Review*, 1865.) *Critiques and Addresses; Collected Essays*, vii.

"On the Advisableness of Improving Natural Knowledge." (A Lay Sermon delivered in St. Martin's Hall, January 7, 1866, and subsequently published in the *Fortnightly Review*.) *Lay Sermons; Collected Essays*, i.

"A Liberal Education: and where to find it." (An Address to the South London Working Men's College, delivered January 4, 1868, and subsequently published in *Macmillan's Magazine*.) *Lay Sermons; Collected Essays*, iii.

"On a Piece of Chalk." (A Lecture delivered to the working men of Norwich, during the meeting of the British Association, in 1868. Subsequently published in *Macmillan's Magazine*.) *Lay Sermons*; *Collected Essays*, viii.

"On the Physical Basis of Life." (A Lay Sermon, delivered in Edinburgh, on Sunday, November 8, 1868, at the request of the late Rev. James Cranbrook; subsequently published in the *Fortnightly Review*.) *Lay Sermons; Collected Essays*, i.

"The Scientific Aspects of Positivism." (A Reply to Mr. Congreve's Attack upon the Preceding Paper. Published in the *Fortnightly Review*, 1869.) *Lay Sermons.*

"The Genealogy of Animals." (A Review of Haeckel's *Natürliche Schöpfungs-Geschichte.* The *Academy*, 1869.) *Critiques and Addresses; Collected Essays*, ii.

"Geological Reform." (The Anniversary Address to the Geological Society for 1869.) *Lay Sermons; Collected Essays*, viii.

"Scientific Education: Notes of an After-Dinner Speech." (Delivered before the Liverpool Philomathic Society in April 1869, and subsequently published in *Macmillan's Magazine*.) *Lay Sermons; Collected Essays*, iii.

"On Descartes' 'Discourse touching the Method of using one's Reason rightly, and of seeking Scientific Truth.'" (An Address to the Cambridge Young Men's Christian Society, delivered on March 24, 1870, and subsequently published in *Macmillan's Magazine*.) *Lay Sermons; Collected Essays*, i.

"On some Fixed Points in British Ethnology." (The *Contemporary Review*, July 1870.) *Critiques and Addresses; Collected Essays*, vii.

"Biogenesis and Abiogenesis." (The Presidential Address to the British Association for the Advancement of Science, 1870.) *Critiques and Addresses; Collected Essays*, viii.

"Paleontology and the Doctrine of Evolution." (The Presidential Address to the Geological Society, 1870.) *Critiques and Addresses; Collected Essays*, viii.

"On Medical Education." (An Address to the Students of the Faculty of Medicine in University College, London, 1870.) *Critiques and Addresses; Collected Essays*, iii.

"On Coral and Coral Reefs." (*Good Words*, 1870.) *Critiques and Addresses.*

"The School Boards: What they can do, and what they may do." (The *Contemporary Review*, 1870.) *Critiques and Addresses; Collected Essays*, iii.

"Administrative Nihilism." (An Address delivered to the Members of the Midland Institute, on October 9, 1871, and subsequently published in the *Fortnightly Review*.) *Critiques and Addresses; Collected Essays*, i.

"Mr. Darwin's Critics." (The *Contemporary Review*, November 1871.) *Critiques and Addresses; Collected Essays*, ii.

"On the Formation of Coal." (A Lecture delivered before the Members of the Bradford Philosophical Institution, and subsequently published in the *Contemporary Review*.) *Critiques and Addresses; Collected Essays*, viii.

"Yeast." (The *Contemporary Review*, December 29, 1871.) *Critiques and Addresses; Collected Essays*, viii.

"Bishop Berkeley on the Metaphysics of Sensation." (*Macmillan's Magazine*, June 1871). *Critiques and Addresses; Collected Essays*, vi.

"The Problems of the Deep Sea" (1873.) *Collected Essays*, viii.

"Universities: Actual and Ideal." (The Inaugural Address of the Lord Rector of the University of Aberdeen, February 27, 1874. *Contemporary Review*, 1874.) *Science and Culture; Collected Essays*, iii.

"Joseph Priestley." (An Address delivered on the Occasion of the Presentation of a Statue of Priestley to the Town of Birmingham on August 1, 1874.) *Science and Culture, Collected Essays*, iii.

"On the Hypothesis that Animals are Automata, and its History." (An Address delivered at the Meeting of the British Association for the Advancement of Science, at Belfast, 1874.) *Science and Culture; Collected Essays*, i.

"On some of the Results of the Expedition of H.M.S. *Challenger*," 1875. *Collected Essays*, viii.

"On the Border Territory between the Animal and Vegetable Kingdoms." (An Evening Lecture at the Royal Institution,

Friday, January 28, 1876. *Macmillan's Magazine*, 1876.) *Science and Culture; Collected Essays*, viii.

"Three Lectures on Evolution." (New York, September 18, 20, 22, 1876.) *American Addresses; Collected Essays*, iv.

"On the Study of Biology." (A Lecture in connection with the Loan Collection of Scientific Apparatus at South Kensington Museum, December 16, 1876.) *American Addresses; Collected Essays*, iii.

"Address on University Education." (Delivered at the opening of the Johns Hopkins University, Baltimore, September 12, 1876.) *American Addresses; Collected Essays*, iii.

"Elementary Instruction in Physiology." (Read at the Meeting of the Domestic Economy Congress at Birmingham, 1877.) *Science and Culture; Collected Essays*, iii.

"Technical Education." (An Address delivered to the Working Men's Club and Institute, December 1, 1877.) *Science and Culture; Collected Essays*, iii.

"Evolution in Biology." (The *Encyclopædia Britannica*, ninth edition, vol. viii. 1878.) *Science and Culture; Collected Essays*, ii.

"Hume," 1878. *Collected Essays*, vi. *See* also under "Books."

"On Sensation and the Unity of Structure of the Sensiferous Organs." (An Evening Lecture at the Royal Institution, Friday, March 7, 1879.) *Nineteenth Century*, April, 1879. *Science and Culture; Collected Essays*, vi.

"Prefatory Note to the Translation of E. Haeckel's Freedom in Science and Teaching," 1879. (Kegan Paul.)

"On Certain Errors respecting the Structure of the Heart attributed to Aristotle." *Nature*, November 6, 1879. *Science and Culture.*

"The Coming of Age of 'The Origin of Species.'" (An Evening Lecture at the Royal Institution, Friday, April 9, 1880.) *Science and Culture; Collected Essays*, ii.

"On the Method of Zadig." (A Lecture delivered at the Working Men's College, Great Ormond Street, 1880. *Nineteenth Century*, June 1880.) *Science and Culture; Collected Essays*, iv.

"Science and Culture." (An Address delivered at the Opening of Sir Josiah Mason's Science College, at Birmingham, on October 1, 1880.) *Science and Culture; Collected Essays*, iii.

"The Connection of the Biological Sciences with Medicine." (An Address delivered at the Meeting of the International Medical Congress in London, August 9, 1881.) *Science and Culture; Collected Essays*, iii.

"The Rise and Progress of Paleontology." (An Address delivered at the York Meeting of the British Association for the Advance-

ment of Science, 1881.) *Controverted Questions; Collected Essays*, iv.

"Charles Darwin." (Obituary Notice in *Nature*, April, 1882.) *Collected Essays*, ii.

"On Science and Art in Relation to Education." (An Address to the Members of the Liverpool Institution, 1882.) *Collected Essays*, iii.

"The State and the Medical Profession." (The Opening Address at the London Hospital Medical School, 1884.) *Collected Essays*, iii.

"The Darwin Memorial." (A Speech delivered at the Unveiling of the Darwin Statue at South Kensington, June 9, 1885.) *Collected Essays*, ii.

"The Interpreters of Genesis and the Interpreters of Nature." (*Nineteenth Century*, December 1885.) *Controverted Questions; Collected Essays*, iv.

"Mr. Gladstone and Genesis." (*Nineteenth Century*, February 1886.) *Controverted Questions; Collected Essays*, iv.

"The Evolution of Theology: An Anthropological Study." (*Nineteenth Century*, March and April 1886.) *Controverted Questions; Collected Essays*, iv.

"Science and Morals." (*Fortnightly Review*, November, 1886.) *Controverted Questions; Collected Essays*, ix.

"Scientific and Pseudo-Scientific Realism." (*Nineteenth Century*, February 1887.) *Controverted Questions; Collected Essays*, v.

"Science and Pseudo-Science." (*Nineteenth Century*, April 1887.) *Controverted Questions; Collected Essays*, v.

"An Episcopal Trilogy." (*Nineteenth Century*, November 1887.) *Controverted Questions; Collected Essays*, v.

"Address on behalf of the National Association for the Promotion of Technical Education" (1887). *Collected Essays*, iii.

"The Progress of Science" (1887). (Reprinted from *The Reign of Queen Victoria*, by T. H. Ward.) *Collected Essays*, i.

"Darwin Obituary." (*Proc. Roy. Soc.* 1888.) *Collected Essays*, ii.

"The Struggle for Existence in Human Society." (*Nineteenth Century*, February 1888.) *Collected Essays*, ix.

"Agnosticism." (*Nineteenth Century*, February 1889.) *Controverted Questions; Collected Essays*, v.

"The Value of Witness to the Miraculous." (*Nineteenth Century*, March 1889.) *Controverted Questions; Collected Essays*, v.

"Agnosticism: A Rejoinder." (*Nineteenth Century*, April 1889.) *Controverted Questions; Collected Essays*, v.

"Agnosticism and Christianity." (*Nineteenth Century*, June 1889). *Controverted Questions; Collected Essays*, v.

"The Lights of the Church and the Light of Science." (*Nine-*

teenth Century, July 1890.) *Controverted Questions; Collected Essays*, iv.

"The Keepers of the Herd of Swine." (*Nineteenth Century*, December 1890.) *Controverted Questions; Collected Essays*, v.

"Capital, the Mother of Labour." (*Nineteenth Century*, March 1890.) *Collected Essays*, ix.

"The Natural Inequality of Men." (*Nineteenth Century*, January 1890.) *Collected Essays*, i.

"Natural Rights and Political Rights." (*Nineteenth Century*, February 1890.) *Collected Essays*, i.

"Government: Anarchy or Regimentation." (*Nineteenth Century*, May 1890.) *Collected Essays*, i.

"Autobiography." (1890, *Collected Essays*, i.) This originally appeared with a portrait in a series of biographical sketches by C. Engel.

"The Aryan Question." (*Nineteenth Century*, November 1890.) *Collected Essays*, vii.

"Illustrations of Mr. Gladstone's Controversial Methods." (*Nineteenth Century*, March 1891). *Controverted Questions; Collected Essays*, v.

"Hasisadra's Adventure." (*Nineteenth Century*, June 1891.) *Controverted Questions; Collected Essays*, iv.

"Possibilities and Impossibilities." (The *Agnostic Annual* for 1892.) 1891, *Collected Essays*, v.

"Social Diseases and Worse Remedies" (1891). Letters to the *Times*, December 1890 and January 1891. Published in pamphlet form (Macmillan & Co.) 1891. *Collected Essays*, ix.

"An Apologetic Irenicon." (*Fortnightly Review*, November 1892.)

"Prologue to 'Controverted Questions'" (1892). *Controverted Questions; Collected Essays*, v.

"Evolution and Ethics," being the Romanes Lecture for 1893. Also "Prolegomena," 1894. *Collected Essays*, ix.

"Owen's Position in Anatomical Science," being a chapter in the *Life of Sir Richard Owen*, by his grandson, the Rev. Richard Owen (1894).

BOOKS

"Kölliker's Manual of Human Histology." (Translated and edited by T. H. Huxley and G. Busk), 1853.

"Evidence as to Man's Place in Nature," 1863.

"Lectures on the Elements of Comparative Anatomy" (one volume only published), 1864.

"Elementary Atlas of Comparative Osteology" (in 12 plates), 1864.

"Lessons in Elementary Physiology." First edition printed 1866; second edition, 1868; reprinted 1869, 1870, 1871, 1872

(twice); third edition, 1872; reprinted 1873, 1874, 1875, 1876, 1878, 1879, 1881, 1883, 1884 (six times); fourth edition, 1885; reprinted 1886, 1888, 1890, 1892, 1893 (twice), 1896, 1898.

"An Introduction to the Classification of Animals," 1869.

"Lay Sermons, Addresses, and Reviews." First edition printed 1870; second edition, 1871; reprinted 1871, 1872, 1874, 1877, 1880, 1883; third edition, 1887; reprinted 1891, 1893 (twice), 1895, 1899.

"Essays Selected from Lay Sermons, Addresses, and Reviews." First edition, 1871; reprinted 1874, 1877.

"Manual of the Anatomy of Vertebrated Animals," 1871 (Churchill).

"Critiques and Addresses." First edition printed 1873; reprinted 1883 and 1890.

"A Course of Practical Instruction in Elementary Biology." By Prof. Huxley and Dr. H. N. Martin. First edition printed 1875; second edition, 1876; reprinted 1877 (twice), 1879 (twice), 1881, 1882, 1883, 1885, 1886 (three times), 1887; third edition, edited by Messrs. Howes and Scott, 1887; reprinted 1889, 1892, 1898.

"American Addresses." First edition printed 1877; reprinted 1886.

"Anatomy of Invertebrated Animals," 1877.

"Physiography." First edition, 1877; reprinted 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885 (three times), 1887, 1888, 1890, 1891, 1893, 1897.

"Hume." English Men of Letters Series. First edition printed 1878; reprinted 1879 (twice), 1881, 1886, 1887, 1895.

"The Crayfish: an Introduction to the Study of Zoology," 1879.

"Evolution and Ethics." First edition printed 1893; reprinted 1893 (three times); second edition, 1893; third edition, 1893; reprinted 1894.

"Introductory Science Primer." First edition printed 1880; reprinted 1880, 1886, 1888, 1889 (twice), 1893, 1895, 1899.

"Science and Culture, and other Essays." First edition printed 1881; reprinted 1882, 1888.

"Social Diseases and Worse Remedies." First edition printed 1891; reprinted, with additions, 1891 (twice).

"Essays on some Controverted Questions." Printed in 1892.

Collected Essays. Vol. I. "Method and Results." First edition printed 1893; reprinted 1894, 1898.

Vol. II. "Darwiniana." First edition printed 1893; reprinted 1894.

Vol. III. "Science and Education." First edition printed 1893; reprinted 1895.

Vol. IV. "Science and Hebrew Tradition." First edition printed 1893; reprinted 1895, 1898.

Vol. V. "Science and Christian Tradition." First edition printed 1894; reprinted 1895, 1897.
Vol. VI. "Hume, with Helps to the Study of Berkeley." First edition printed 1894; reprinted 1897.
Vol. VII. "Man's Place in Nature." First printed for Macmillan and Co. in 1894; reprinted 1895, 1897.
Vol. VIII. "Discourses, Biological and Geological." First edition printed 1894; reprinted 1896.
Vol. IX. "Evolution and Ethics and other Essays." First edition printed 1894; reprinted 1895, 1898.
"Scientific Memoirs," vol. i. printed 1898, vol. ii. printed 1899, vols. iii. and iv. to follow.

SCIENTIFIC MEMOIRS

"On a Hitherto Undescribed Structure in the Human Hair Sheath," *Lond. Medical Gazette*, i. 1340 (July 1845).
"Examination of the Corpuscles of the Blood of Amphioxus Lanceolatus," *Brit. Assoc. Report* (1847), pt. ii. 95; *Sci. Mem.* i.
"Description of the Animal of Trigonia," *Proc. Zool. Soc.* vol. xvii. (1849), 30-32; also in *Ann. and Mag. of Nat. Hist.* v. (1850), 141-143; *Sci. Mem.* i.
"On the Anatomy and the Affinities of the Family of the Medusæ," *Phil. Trans. Roy. Soc.* (1849), pt. ii. 413; *Sci. Mem.* i.
"Notes on Medusæ and Polypes," *Ann. and Mag. of Nat. Hist.* vi. (1850), 66, 67; *Sci. Mem.* i.
"Observations sur la Circulation du Sang chez les Mollusques des Genres Firole et Atlante." (Extraites d'une lettre adressée à M. Milne-Edwards.) *Annales des Sciences Naturelles*, xiv. (1850), 193-195; *Sci. Mem.* i.
"Observations upon the Anatomy and Physiology of Salpa and Pyrosoma," *Phil. Trans. Roy. Soc.* (1851), pt. ii. 567-594; also in *Ann. and Mag. of Nat. Hist.* ix. (1852), 242-244; *Sci. Mem.* i.
"Remarks upon Appendicularia and Doliolum, two Genera of the Tunicata," *Phil. Trans. Roy. Soc.* (1851), pt. ii. 595-606; *Sci. Mem.* i.
"Zoological Notes and Observations made on board H.M.S. *Rattlesnake* during the years 1846-1850," *Ann. and Mag. Nat. Hist.* vii. ser. ii. (1851), 304-306, 370-374; vol. viii. 433-442; *Sci. Mem.* i.
"Observations on the Genus Sagitta," *Brit. Assoc. Report* (1851), pt. ii. 77, 78 (sectional transactions); *Sci. Mem.* i.
"An Account of Researches into the Anatomy of the Hydrostatic

Acalephæ," *Brit. Assoc. Report* (July 1851), pt. ii. 78-80 (sectional transactions); *Sci. Mem.* i.

"Description of a New Form of Sponge-like Animal," *Brit. Assoc. Report* (July 1851), pt. ii. 80 (sectional transactions); *Sci. Mem.* i.

"Report upon the Researches of Prof. Müller into the Anatomy and Development of the Echinoderms," *Ann. and Mag. of Nat. Hist.* ser. ii., vol. viii. (1851), 1-19; *Sci. Mem.* i.

"Ueber die Sexualorgane der Diphydae und Physophoridae," Müller's *Archiv. fur Anatomie, Physiologie, und Wissenschaftliche Medicin* (1851), 380-384. *Sci. Mem.* i.

"Lacinularia Socialis: A Contribution to the Anatomy and Physiology of the Rotifera," *Trans. Micr. Soc.*, Lond., new series, i. (1853), 1-19; (Read December 31, 1851). *Sci. Mem.* i.

"Upon Animal Individuality," *Proc. Roy. Inst.* i. (1851-54), 184-189. (Abstract of a Friday evening discourse delivered on 30th April 1852.) *Sci. Mem.* i.

"On the Morphology of the Cephalous Mollusca, as Illustrated by the Anatomy of certain Heteropoda and Pteropoda collected during the voyage of H.M.S. *Rattlesnake* in 1846-50," *Phil. Trans. Roy. Sci.* cxliii. (1853), part i. 29-66. *Sci. Mem.* i.

"Researches into the Structure of the Ascidians," *Brit. Assoc. Report* (1852), part ii. 76-77. *Sci. Mem.* i.

"On the Anatomy and Development of Echinococcus Veterinorum," *Proc. Zool. Soc.* xx, (1852), 110-126. *Sci. Mem.* i.

"On the Identity of Structure of Plants and Animals"; Abstract of a Friday evening discourse delivered at the Royal Institution on April 15, 1853; *Proc. Roy. Inst.* i. (1851-54), 298-302; *Edinburgh New Phil. Jour.* liii. (1852), 172-177. *Sci. Mem.* i.

"Observations on the Existence of Cellulose in the Tunic of Ascidians," *Quart. Jour. Micr. Sci.* i. 1853; *Sci. Mem.* i.

"On the Development of the Teeth, and on the Nature and Import of Nasmyth's 'Persistent Capsule,'" *Quart. Jour. Micr. Sci.* i. 1853. *Sci. Mem.* i.

"The Cell-Theory (Review)," *Brit. and For. Med. Chir. Review*, xii. (1853), 285-314. *Sci. Mem.* i.

"On the Vascular System of the Lower Annulosa," *Brit. Assoc. Report* (1854), part ii. p. 109. *Sci. Mem.* i.

"On the Common Plan of Animal Forms." (Abstract of a Friday evening discourse delivered at the Royal Institution on May 12, 1854.) *Proc. Roy. Inst.* i. (1851-54), 444-446. *Sci. Mem.* i.

"On the Structure and Relation of the Corpuscula Tactus (Tactile

Corpuscles or Axile Corpuscles) and of the Pacinian Bodies," *Quart. Jour. Micr. Sci.* ii. (1853), 1-7. *Sci. Mem.* i.

"On the Ultimate Structure and Relations of the Malpighian Bodies of the Spleen and of the Tonsillar Follicles," *Quart. Jour. Micr. Sci.* ii. (1854), 74-82. *Sci. Mem.* i.

"On certain Zoological Arguments commonly adduced in favour of the Hypothesis of the Progressive Development of Animal Life in Time." (Abstract of a Friday evening discourse delivered on April 20, 1855.) *Proc. Roy. Inst.* ii. (1854-58), 82-85. *Sci. Mem.* i.

"On Natural History as Knowledge, Discipline, and Power," *Roy. Inst. Proc.* ii. (1854-58), 187-195. (Abstract of a discourse delivered on Friday, February 15, 1857.) *Sci. Mem.* i.

"On the Present State of Knowledge as to the Structure and Functions of Nerve," *Proc. Roy. Inst.* ii. (1854-58), 432-437. (Abstract of a discourse delivered on Friday, May 15, 1857.) *Sci. Mem.* i.

(Translation) "On Tape and Cystic Worms," von Siebold (1857), for the Sydenham Society.

"Contributions to *Icones Zootomicae*," by Victor Carus (1857).

"On the Phenomena of Gemmation." (Abstract of a discourse delivered on Friday, May 21, 1858.) *Proc. Roy. Inst.* ii. (1854-58), 534-538; *Silliman's Journal*, xxviii. (1859), 206-209. *Sci. Mem.* i.

"Contributions to the Anatomy of the Brachiopoda," *Proc. Roy. Soc.* vii. (1854-55), 106-117; 241, 242. *Sci. Mem.* i.

"On Hermaphrodite and Fissiparous Species of Tubicolar Annelidae (Protula Dysteri)," *Edin. New Phil. Jour.* i. (1855), 113-129. *Sci. Mem.* i.

"On the Structure of Noctiluca Miliaris," *Quart. Jour. Micr. Soc.* iii. (1855), 49-54. *Sci. Mem.* i.

"On the Enamel and Dentine of the Teeth," *Quart. Jour. Micr. Soc.* iii. (1855), 127-130. *Sci. Mem.* i.

"Memoir on Physalia," *Proc. Linn. Soc.* ii. (1855), 3-5. *Sci. Mem.* i.

"On the Anatomy of Diphyes, and on the Unity of Composition of the Diphyidae and Physophoridae, etc.," *Proc. Linn. Soc.* ii. (1855), 67-69. *Sci. Mem.* i.

"Tegumentary Organs," *The Cyclopædia of Anatomy and Physiology*, edited by Robert B. Todd, M.D., F.R.S. (The fascicules containing this article were published between August 1855 and October 1856.) *Sci. Mem.* i.

"On the Method of Palæontology," *Ann. and Mag. of Nat. Hist.* xviii. (1856), 43-54. *Sci. Mem.* i.

"Observations on the Structure and Affinities of Himantopterus," *Quart. Jour. Geol. Soc.* xii. (1856), 34-37. *Sci. Mem.* i.

"Further Observations on the Structure of Appendicula Flabellum (Chamisso)," *Quart. Jour. Micr. Soc.* iv. (1856), 181-191. *Sci. Mem.* i.

"Note on the Reproductive Organs of the Cheilostome Polyzoa," *Quart. Jour. Micr. Soc.* iv. (1856), 191, 192. *Sci. Mem.* i.

"Description of a New Crustacean (Pygocephalus Cooperi, Huxley) from the Coal-measures," *Quart. Jour. Geol. Soc.* xiii. (1857), 363-369. *Sci. Mem.* i.

"On Dysteria, a New Genus of Infusoria," *Quart. Jour. Micr. Soc.* v. (1857), 78-82. *Sci. Mem.* i.

"Review of Dr. Hannover's Memoir: *Ueber die Entwickelung und den Bau des Säugethierzahns*," *Quart. Jour. Micr. Soc.* v. (1857), 166-171. *Sci. Mem.* i.

"Letter to Mr. Tyndall on the Structure of Glacier Ice," *Phil. Mag.* xiv. (1857), 241-260. *Sci. Mem.* i.

"On Cephalaspis and Pteraspis," *Quart. Jour. Geol. Soc.* xiv. (1858), 267-280. *Sci. Mem.* i.

"Observations on the Genus Pteraspis," *Brit. Assoc. Report* (1858), part ii. 82, 83. *Sci. Mem.* i.

"On a New Species of Plesiosaurus (P. Etheridgii) from Street, near Glastonbury; with Remarks on the Structure of the Atlas and the Axis Vertebræ and of the Cranium in that Genus," *Quart. Jour. Geol. Soc.* xiv. (1853), 281-94. *Sci. Mem.* i.

"On the Theory of the Vertebrate Skull," *Proc. Roy. Soc.* ix. (1857-59), 381-457; *Ann. and Mag. of Nat. Hist.* iii. (1859), 414-39. *Sci. Mem.* i.

"On the Structure and Motion of Glaciers," *Phil. Trans. Roy. Soc.* cxlvii. (1857), 327-346. (Received and read January 15, 1857.) *Sci. Mem.* ii.

"On the Agamic Reproduction and Morphology of Aphis," *Trans. Linn. Soc.* xxii. (1858), 193-220, 221-236. (Read November 5, 1857.) *Sci. Mem.* ii.

"On Some Points in the Anatomy of Nautilus Pompilius," *Jour. Linn. Soc.* iii. (1859) (*Zool.*), 36-44. (Read June 3, 1858.) *Sci. Mem.* ii.

"On the Persistent Types of Animal Life," *Proc. Roy. Inst. of Great Britain*, iii. (1858-62), 151-153. (Friday, June 3, 1859.) *Sci. Mem.* ii.

"On the Stagonolepis Robertsoni (Agassiz) of the Elgin Sandstones; and on the Recently Discovered Footmarks in the Sandstones of Cummingstone," *Quart. Jour. Geol. Soc.* xv. (1859), 440-460. *Sci. Mem.* ii.

"On Some Amphibian and Reptilian Remains from South Africa and Australia," *Quart. Jour. Geol. Soc.* xv. (1859), 642-649. (Read March 3, 1859.) *Sci. Mem.* ii.

"On a New Species of Dicynodon (D. Murrayi) from near Colesberg, South Africa; and on the Structure of the Skull in the Dicynodonts," *Quart. Jour. Geol. Soc.* xv. (1859), 649-658. (Read March 23, 1859.) *Sci. Mem.* ii.

"On Rhamphorhynchus Bucklandi, a Pterosaurian from the Stonesfield Slate," *Quart. Jour. Geol. Soc.* xv. (1859), 658-670. (Read March 23, 1859.) *Sci. Mem.* ii.

"On a Fossil Bird and a Fossil Cetacean from New Zealand,' *Quart. Jour. Geol. Soc.* xv. (1859), 670-677. (Read March 23, 1859.) *Sci. Mem.* ii.

"On the Dermal Armour of Crocodilus Hastingsiæ," *Quart. Jour. Geol. Soc.* xv. (1859), 678-680. (Read March 23, 1859.) *Sci. Mem.* ii.

"British Fossils," part i. "On the Anatomy and Affinities of the Genus Pterygotus," *Mem. Geol. Sur. of United Kingdom*, Monograph I. (1859), 1-36. *Sci. Mem.* ii.

"British Fossils," part ii. "Description of the Species of Pterygotus," by J. W. Salter, F.G.S., A.L.S., *Mem. Geol. Sur. of United Kingdom*, Monograph I. (1859), 37-105. *Sci. Mem.* ii.

"On Dasyceps Bucklandi (Labyrinthodon Bucklandi, Lloyd)," *Mem. Geol. Sur. of United Kingdom* (1859), 52-56. *Sci. Mem.* ii.

"On a Fragment of a Lower Jaw of a Large Labyrinthodont from Cubbington," *Mem. Geol. Sur. of United Kingdom* (1859), 56-57. *Sci. Mem.* ii.

"Observations on the Development of Some Parts of the Skeleton of Fishes," *Quart. Jour. Micr. Sci.* vii. (1859), 33-46. *Sci. Mem.* ii.

"On the Dermal Armour of Jacare and Caiman, with Notes on the Specific and Generic Characters of Recent Crocodilia," *Jour. Linn. Soc.* iv. (1860) (*Zool.*), 1-28. (Read February 15, 1859.) *Sci. Mem.* ii.

"On the Anatomy and Development of Pyrosoma," *Trans. Linn. Soc.* xxiii. (1862), 193-250. (Read December 1, 1859.) *Sci. Mem.* ii.

"On the Oceanic Hydrozoa," *Ray Soc.* (1859).

"On Species and Races, and Their Origin" (1860), *Proc. Roy. Inst.* iii. (1858-62), 195-200; *Ann. and Mag. of Nat. Hist.* v. (1860), 344-346. *Sci. Mem.* ii.

"On the Structure of the Mouth and Pharynx of the Scorpion," *Quart. Jour. Micr. Sci.* viii. (1860), 250-254. *Sci. Mem.* ii.

"On the Nature of the Earliest Stages of the Development of Animals," *Proc. Roy. Inst.* iii. (1858-62), 315-317. (February 8, 1861.) *Sci. Mem.* ii.

"On a New Species of Macrauchenia (M. Boliviensis)," *Quart. Jour. Geol. Soc.* xvii. (1861), 73-84. *Sci. Mem.* ii.

"On Pteraspis Dunensis (Archæoteuthis Dunensis, Römer)," *Quart. Jour. Geol. Soc.* xvii. (1861), 163-166. *Sci. Mem.* ii.

"Preliminary Essay upon the Systematic Arrangement of the Fishes of the Devonian Epoch," *Mem. Geol. Sur. of United Kingdom*, "Figures and Descriptions of British Organic Remains" (1861, Decade *x*), 41-46. *Sci. Mem.* ii.

"Glyptolæmus Kinnairdi," *Mem. Geol. Sur. of United Kingdom*, "Figures and Descriptions of British and Organic Remains" (1861, Decade *x*), 41-56. *Sci. Mem.* ii.

"Phaneropleuron Andersoni," *Mem. Geol. Sur. of United Kingdom*, "Figures and Descriptions of British Organic Remains" (1861, Dec. *x*), 47-49. *Sci. Mem.* ii.

"On the Zoological Relations of Man with the Lower Animals," *Nat. Hist. Rev.* (1861), 67-84. *Sci. Mem.* ii.

"On the Brain of Ateles Paniscus," *Proc. Zool. Soc.* (1861), 247-260. *Sci. Mem.* ii.

"On Fossil Remains of Man," *Proc. Roy. Inst.* (1858-62), 420-422. (February 7, 1862.) *Sci. Mem.* ii.

"Anniversary Address to the Geological Society, 1862," *Quart. Jour. Geol. Soc.* xviii. (1862), xl.-liv. *See* also in list of Essays, "Geological Contemporaneity, etc." *Sci. Mem.* ii.

"On the New Labyrinthodonts from the Edinburgh Coal-field," *Quart. Jour. Geol. Soc.* xviii. (1862), 291-296. *Sci. Mem.* ii.

"On a Stalk-eyed Crustacean from the Carboniferous Strata near Paisley," *Quart. Jour. Geol. Soc.* xviii. (1862), 420-422. *Sci. Mem.* ii.

"On the Premolar Teeth of Diprotodon, and on a New Species of that Genus (D. Australis)," *Quart. Jour. Geol. Soc.* xviii. (1862), 422-427. *Sci. Mem.* ii.

"Description of a New Specimen of Glyptodon recently acquired by the Royal College of Surgeons," *Proc. Roy. Soc.* xii. (1862-63), 316-326. *Sci. Mem.* ii.

"Letter on the Human Remains found in Shell-mounds" (June 28, 1862), *Trans. Ethn. Soc.* ii. (1863), 265-266. *Sci. Mem.* ii.

"Description of Anthracosaurus Russelli, a New Labyrinthodont from the Lanarkshire Coal-field," *Quart. Jour. Geol. Soc.* xix. (1863), 56-68. *Sci. Mem.* ii.

"On a Collection of Vertebrate Fossils from the Panchet Rocks, Ranigunj, Bengal," *Mem. Geol. Sur. of India; Palaeontologica Indica*, ser. iv.; *Indian Pretertiary Vertebrata*, i. (1865-85).

"Further Remarks upon the Human Remains from the Neanderthal," *Nat. Hist. Rev.* (1864), 429-446. *Sci. Mem.* ii.

"On the Angwántibo (Arctocebus Calabarensis, Gray) of Old Calabar," *Proc. Zool. Soc.* (1864), 314-335. *Sci. Mem.* ii.

"On the Cetacean Fossils termed 'Ziphius' by Cuvier, with a Notice of a New Species (Belemnoziphius Compressus) from

the Red Crag," *Quart. Jour. Geol. Soc.* xx. (1864), 388-396.

"On the Structure of the Belemnitidæ," *Mem. Geol. Sur. of United Kingdom*, Monograph II. (1864).

"The Crocodilian Remains found in the Elgin Sandstones, with Remarks, etc." *Mem. Geol. Sur. of United Kingdom*, Monograph III. (1877).

"On the Osteology of the Genus Glyptodon" (1864), *Phil. Trans. Roy. Soc.* clv. (1865), 31-70.

"On the Structure of the Stomach in Desmodus Rufus," *Proc. Zool. Soc.* (1865), 386-390.

"On the Methods and Results of Ethnology" (1865), *Proc. Roy. Inst.* iv. (1866), 460-463. See also *Collected Essays*, vii.

"On Two Extreme Forms of Human Crania," *Anthropological Review*, iv. (1866), 404-406.

"Description of Vertebrate Remains from the Jarrow Colliery, Kilkenny, Ireland," *Geol. Mag.* iii. (1866), 165-171.

"On some Remains of Large Dinosaurian Reptiles from the Stormberg Mountains, South Africa," *Phil. Mag.* xxxii. (1866), 474-475; *Quart. Jour. Geol. Soc.* xxiii. (1867), 1-6.

"On a New Specimen of Telerpeton Elginense" (1866), *Quart. Jour. Geol. Soc.* xxiii. (1867), 77-84.

"Notes on the Human Remains of Caithness" (1866), in the *Prehistoric Remains of Caithness*, by S. Laing.

"On Two Widely Contrasted Forms of the Human Cranium," *Jour. Anat. and Phys.* i. (1867), 60-77.

"On Acanthopholis Horridus, a New Reptile from the Chalk-Marl," *Geol. Mag.* iv. (1867), 65-67.

"On the Classification of Birds; and on the Taxonomic Value of the Modifications of certain of the Cranial Bones observable in that Class," *Proc. Zool. Soc.* (1867), 415-472.

"On the Animals which are most nearly Intermediate between Birds and Reptiles," *Ann. and Mag. of Nat. Hist.* ii. (1868), 66-75.

"On Saurosternon Bainii and Pristerodon M'Kayi, two New Fossil Lacertilian Reptiles from South Africa," *Geol. Mag.* v. (1868), 201-205.

"Reply to Objections on my Classification of Birds," *Ibis*, iv. (1868), 357-362.

"On the Form of the Cranium among the Patagonians and Fuegians, with some Remarks upon American Crania in general," *Jour. Anat. and Phys.* ii. (1868), 253-271.

"On some Organisms living at Great Depths in the North Atlantic Ocean," *Quart. Jour. Micr. Sci.* viii. (1868), 203-212.

"Remarks upon Archæopteryx Lithographica," *Proc. Roy. Soc.* xvi. (1868), 243-248.

"On the Classification and Distribution of the Alectoromorphæ and Heteromorphæ," *Proc. Zool. Soc.* (1868), 294-319.

"On Hyperodapedon," *Quart. Jour. Geol. Soc.* xxv. (1869), 138-152.

"On a New Labyrinthodont (Pholiderpeton Scutigerum) from Bradford," *Quart. Jour. Geol. Soc.* xxv. (1869), 309-310.

"On the Upper Jaw of Megalosaurus," *Quart. Jour. Geol. Soc.* xxv. (1869), 311-314.

"Principles and Methods of Paleontology." (Written earlier as the Introduction to the Collection of Fossils at Jermyn Street.) *Smithsonian Report* (1869), 363-388.

"On the Representatives of the Malleus and the Incus of Mammalia in the Other Vertebrata," *Proc. Zool. Soc.* (1869), 391-407.

"Address to the Geological Society, 1869," *Quart. Jour. Geol. Soc.* xxv. (1869), 28-53.

"Further Observations on Hyperodapedon," *Quart. Jour. Geol. Soc.* xliii. (1887), 675-693.

"On the Ethnology and Archæology of India." (Opening Address of the President, March 9, 1869.) *Jour. Ethn. Soc. of London*, i. (1869), 89-93. (Delivered March 9, 1869.)

"On the Ethnology and Archæology of North America." (Address of the President, April 13, 1869.) *Jour. Ethn. Soc. of London*, i. (1869), 218-221.

"On Hypsilophodon Foxii, a New Dinosaurian from the Wealden of the Isle of Wight" (1869), *Quart. Jour. Geol. Soc.* xxvi. (1870), 3-12.

"Further Evidence of the Affinity between the Dinosaurian Reptiles and Birds" (1869), *Quart. Jour. Geol. Soc.* xxvi. (1870), 12-31.

"On the Classification of the Dinosauria, with Observations on the Dinosauria of the Trias" (1869), *Quart. Jour. Geol. Soc.* xxvi. (1870), 32-50.

"On the Geographical Distribution of the Chief Modifications of Mankind," *Jour. Ethn. Soc. of London*, new series, ii. (1870) 404-412. (June 7, 1870.)

"On the Ethnology of Britain," *Jour. Ethn. Soc. of London*, ii. (1870), 382-384. (Delivered May 10, 1870).

"On a New Labyrinthodont from Bradford, with a Note on its Locality and Stratigraphical Position." By Louis C. Miall. *Phil. Mag.* xxxix. (1870), 385.

"Anniversary Address to Geological Society, 1870," *Quart. Jour. Geol. Soc.* xxvi. (1870), 29-64. (*Paleontology and the Doctrine of Evolution*), *Collected Essays*, viii. 340.

"Address to the British Association at Liverpool," *Brit. Assoc. Report*, xl. (1870), 73-89. *Collected Essays*, viii.

"On the Milk Dentition of Palæotherium Magnum," *Geol. Mag.* vii. (1870), 153-155.

"Triassic Dinosauria," *Nature*, i. (1870), 23-24.
"On the Maxilla of Megalosaurus," *Phil. Mag.* xxxix. (1870), 385-386.
"On the Relations of Penicillium, Torula, and Bacterium," *Quart. Jour. Micr. Sci.* x. (1870), 355-362.
"On a Collection of Fossil Vertebrata from the Jarrow Colliery, County of Kilkenny, Ireland," *Trans. Royal Irish Academy*, xxiv. (1871), 351-370.
"Yeast," *Contemporary Review*, December 1871.
"Note on the Development of the Columella Auris in the Amphibia," *Brit. Assoc. Report*, 1874 (sect.), 141-142; *Nature*, xi. (1875), 68-69.
"On the Structure of the Skull and of the Heart of Menobranchus Lateralis," *Proc. Zool. Soc.* (1874), 186-204.
"On the Hypothesis that Animals are Automata, and its History," *Nature*, x. (1874), 362-366.
"Preliminary Note upon the Brain and Skull of Amphioxus Lanceolatus" (1874), *Proc. Roy. Soc.* xxiii. (1875).
"On the Bearing of the Distribution of the Portia Dura upon the Morphology of the Skull" (1874), *Proc. Camb. Phil. Soc.* ii. (1876), 348-349.
"On the Classification of the Animal Kingdom" (1874), *Journ. Linn. Soc.* (*Zool.*) xii. (1876), 199-226.
"On the Recent Work of the *Challenger* Expedition, and its Bearing on Geological Problems," *Proc. Roy. Inst.* vii. (1875), 354-357.
"On Stagonolepis Robertsoni, and on the Evolution of the Crocodilia," *Quart. Jour. Geol. Soc.* xxxi. (1875), 423-438.
"Contributions to Morphology. Ichthyopsida.—No. 1. On Ceradotus Forsteri, with Observations on the Classification of Fishes," *Proc. Zool. Soc.* (1876), 24-59.
"On the Position of the Anterior Nasal Apertures in Lepidosiren," *Proc. Zool. Soc.* (1876), 180-181.
"On the Nature of the Cranio-Facial Apparatus of Petromyzon," *Jour. Anat. and Phys.* x. (1876), 412-429.
"On the Evidence as to the Origin of Existing Vertebrate Animals," *Nature*, xiii. (1876), 388-389, 410-412, 429-430, 467-469, 514-516; xiv. (1876), 33-34.
"The Border Territory between the Animal and the Vegetable Kingdoms" (1876), *Proc. Roy. Inst.* viii. (1879), 28-34.
"On the Study of Biology," *Nature*, xv. (1877), 219-224; *American Naturalist*, xi. (1877), 210-221.
"On the Geological History of Birds" (March 2, 1877), *Proc. Roy. Inst.* viii. 347.
"Address to the Anthropological Department of the British Associa-

tion, Dublin, 1878. Informal Remarks on the Conclusions of Anthropology," *Brit. Assoc. Report*, 1878, 573-578.
"On the Classification and the Distribution of the Crayfishes," *Proc. Zool. Soc.* (1878), 752-788.
"On a New Arrangement for Dissecting Microscopes" (1878), *Journ. Quekett Micr. Club*, v. (1878-79), 144-145.
"William Harvey" (1878), *Proc. Roy. Inst.* viii. (1879), 485-500.
"On the Characters of the Pelvis in the Mammalia, and the Conclusions respecting the Origin of Mammals which may be based on them," *Proc. Roy. Soc.* xxviii. (1879), 395-405.
"On Certain Errors respecting the Structure of the Heart, attributed to Aristotle" (1879), *Nature*, xxi. (1880), 1-5. See also *Science and Culture*.
"Sensation and the Unity of Structure of Sensiferous Organs" (1879), *Proc. Roy. Inst.* ix. (1882), 115-124. See also *Collected Essays*, vi.
"On the Epipubis in the Dog and Fox," *Proc. Roy. Soc.* xxx. (1880), 162-163.
"On the Cranial and Dental Characters of the Canidæ," *Proc. Zool. Soc.* (1880), 238-288.
"On the Application of the Laws of Evolution to the Arrangement of the Vertebrata, and more particularly of the Mammalia," *Proc. Zool. Soc.* (1880), 649-662.
"The Coming of Age of 'The Origin of Species'" (1880), *Proc. Roy. Inst.* ix. (1882), 361-368. See also *Collected Essays*, ii.
"The Herring," *Nature*, xxiii. (1881), 607-613.
"Address to the International Medical Congress, London, 1881.—The Connection of the Biological Sciences with Medicine," *Nature*, xxiv. (1881), 342-346.
"The Rise and Progress of Paleontology," *Nature*, xxiv. (1881), 452-455.
"A Contribution to the Pathology of the Epidemic known as the 'Salmon Disease'" (February 21, 1882), *Proc. Roy. Soc.* xxxiii. (1882), 381-389.
"On the Respiratory Organs of Apertyx," *Proc. Zool. Soc.* (1882), 560-569.
"On Saprolegnia in Relation to the Salmon Disease," *Quart. Jour. Micr. Sci.* xxii. (1882), 311-333.
"Contributions to Morphology. Ichthyopsida.—No. 2. On the Oviducts of Osmerus; with Remarks on the Relations of the Teleostean with the Ganoid Fishes," *Proc. Zool. Soc.* (1883), 132-139.
"Oysters and the Oyster Question" (1883), *Proc. Roy. Inst.* x. (1884), 336-358.
"Preliminary Note on the Fossil Remains of a Chelonian Reptile, Ceratochelys Sthenurus, from Lord Howe's Island, Australia,"

Proc. Roy. Soc. xlvi. (1887), 232-238. (Read March 31 1887.)

"The Gentians: Notes and Queries" (April 7, 1887), *Jour. Linn. Soc.* (*Botany*), xxiv. (1888). 101-124.

APPENDIX IV[1]

HONOURS, DEGREES, SOCIETIES, ETC.

ORDER

Norwegian Order of the North Star, 1873.

DEGREES, ETC.

Oxford—Hon. D.C.L. 1885.
Cambridge—Hon. LL.D. 1879.
Rede Lecturer, 1883.
London—First M.B. and Gold Medal, 1845.
Examiner in Physiology and Comparative Anatomy, 1857.
Member of Senate, 1883.
Edinburgh—Hon. LL.D. 1866.
Aberdeen—Lord Rector, 1872.
Dublin—Hon. LL.D. 1878.
Breslau—Hon. Ph.D. and M.A. 1861.
Würzburg—Hon. M.D. 1882.
Bologna—Hon. M.D. 1888.
Erlangen—Hon. M.D. 1893.

SOCIETIES—LONDON

Royal, 1851; Sec. 1872-81; Pres. 1883-85; Royal Society's Medal, 1852; Copley Medal, 1888; Darwin Medal, 1894.
Linnean, 1858; Linnean Medal, 1890.
Geological 1856; Sec. 1859-62; Pres. 1869-70; Wollaston Medal, 1876.
Zoological, 1856.
Odontological, 1863.
Ethnological, 1863; Pres. 1868-70.
Anthropological Institute, 1870.
Medico-Chirurgical, Hon. Memb. 1868.
Medical, Hon. Memb. 1873.
Literary, 1883.

[1] This list has been compiled from such diplomas and letters as I found in my father's possession.

Pharmaceutical, Silver Medal for Botany, 1842.
Royal College of Surgeons, Member, 1862; Fellow, 1883; Hunterian Professor, 1863-69.
St. Thomas's Hospital, Lecturer in Comparative Anatomy, 1854.
British Association for the Advancement of Science, Pres. 1870; Pres. of Section D, 1866.
Royal Institution, Fullerian Lecturer, 1863-67.
British Museum, Trustee, 1888.

Societies—Provincial, Colonial and Indian

Dublin University Zoological and Botanical Association; Corr. Member, 1859.
Liverpool Literary and Philosophic Society, Hon. Memb. 1870.
Manchester Literary and Philosophical Society, Hon. Memb. 1872.
Odontological Society of Great Britain, 1862.
Royal Irish Academy, Hon. Memb. 1874.
Historical Society of Lancashire and Cheshire, Hon. Memb. 1875.
Royal Society of Edinburgh, British Hon. Fellow, 1876.
Glasgow Philosophical Society, Hon. Memb. 1876.
Literary and Antiquarian Society of Perth, Hon. Memb. 1876.
Cambridge Philosophical Society, Hon. Memb. 1871.
Hertfordshire Natural History Society, Hon. Memb. 1883.
Royal College of Surgeons of Ireland, Hon. Memb. 1886.
New Zealand Institute, Hon. Memb. 1872.
Royal Society of New South Wales, Hon. Memb. 1879, Clarke Medal, 1880.

Foreign Societies

International Congress of Anthropology and Prehistoric Archæology, Corr. Memb. 1867.
International Geological Congress (Pres.) 1888.

America

Academy of the Natural Sciences of Philadelphia, Corr. Memb. 1859.
Odontographic Society of Pennsylvania, Hon. Memb. 1865.
American Philosophical Society of Philadelphia, 1869.
Buffalo Society of Natural Sciences, Hon. Memb. 1873.
New York Academy of Sciences, Hon. Memb. 1876.
Boston Society of Natural History, Hon. Memb. 1877.
National Academy of Sciences of the U.S.A., Foreign Associate, 1883.
American Academy of Arts and Sciences, Foreign Hon. Memb. 1883.

Austria-Hungary

Königliche Kaiserliche Geologische Reichsanstalt (Vienna), Corr. Memb. 1860.
K.K. Zoologische-botanische Gesellschaft in Wien, 1865.

Belgium

Académie Royale de Médecine de Belgique, 1874.
Société Géologique de Belgique, Hon. Memb. 1877.
Société d'Anthropologie de Bruxelles, Hon. Memb. 1884.

Brazil

Gabineta Portuguez de Leitura em Pernambuco, Corr. Memb. 1879.

Denmark

Royal Society of Copenhagen, Fellow, 1876.

Egypt

Institut Egyptien (Alexandria), Hon. Memb. 1861.

France

Société Impériale des Sciences Naturelles de Cherbourg, Corr. Memb. 1867.
Institut de France; "Correspondant" in the section of Physiology (succeeding von Baer), 1879.

Germany

Microscopical Society of Giessen, Hon. Memb. 1857.
Imperialis Academia Caesariana Naturae Curiosorum (Dresden), 1857.
Imperial Literary and Scientific Academy of Germany, 1858.
Royal Society of Sciences in Göttingen, Corr. Memb. 1862.
Royal Bavarian Academy of Literature and Science (Munich), For. Memb. 1863.
Royal Prussian Academy of Sciences (Berlin), 1865.
Medicinisch-naturwissenschaftliche Gesellschaft zu Jena, For. Hon. Memb. 1868.
Geographical Society of Berlin, For. Memb. 1869.
Deutscher Fischerei-Verein, Corr. Memb. 1870.

Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte, Corr. Memb. 1871.
Naturforschende Gesellschaft zu Halle, 1879.
Senkenbergische Naturforschende Gesellschaft (Frankfurt a/M.) Corr. Memb. 1892.

Holland

Dutch Society of Sciences (Haarlem), For. Memb. 1877.
Koninklyke Natuurkundige Vereenigung in Nederlandisch-Indie (Batavia), Corr. Memb. 1880.
Royal Academy of Sciences (Amsterdam), For. Memb. 1892.

Italy

Società Italiana di Antropologia e di Etnologia, Hon. Memb. 1872.
Academia de' Lincei di Roma, For. Memb. (supplementary), 1878, ordinary, 1883.
Reale Academia Valdarnense del Poggio (Florence), Corr. Memb. 1883.
Società dei Naturalisti in Modena, Hon. Memb. 1886.
Società Italiana delle Scienze (Naples), For. Memb. 1892.
Academia Scientiarum Instituti Bononiensis (Bologna), Corr. Memb. 1893.

Portugal

Academia Real das Sciencias de Lisboa, For. Corr. Memb. 1874.

Russia

Imperial Academy of Sciences (St. Petersburg), Corr. Memb. 1865.
Societas Caesarea Naturae Curiosorum (Moscow), ordinary member, 1870, Hon. Memb. 1887.

Sweden

Societas Medicorum Svecana, Ordinary Memb. 1866.

ROYAL COMMISSIONS

T. H. Huxley served on the following Royal or other Commissions :—

1. Royal Commission on the Operation of Acts relating to Trawling for Herrings on the Coast of Scotland, 1862.
2. Royal Commission to inquire into the Sea Fisheries of the United Kingdom, 1864-65.

3. Commission on the Royal College of Science for Ireland, 1866.
4. Commission on Science and Art Instruction in Ireland, 1868.
5. Royal Commission upon the Administration and Operation of the Contagious Diseases Acts, 1870-71.
6. Royal Commission on Scientific Instruction and the Advancement of Science, 1870-75.
7. Royal Commission on the Practice of subjecting Live Animals to Experiments for Scientific Purposes, 1876.
8. Royal Commission to inquire into the Universities of Scotland, 1876-78.
9. Royal Commission on the Medical Acts, 1881-82.
10. Royal Commission on Trawl, Net, and Beam Trawl Fishing, 1884.

INDEX

A priori reasoning, ii. 210, 279, 383, 384
Abbott, Dr. E. A., on "Illusions"; correspondence in *Times*, ii. 264 *sqq.*
Aberdeen University, Huxley rejected for chair at, i. 79, 107; Lord Rector of, i. 387
Rectorial Address at, i. 405 *sq.*; translated into German, 407; perils of writing, 450
Aberdour, i. 155
Adamson, Professor, i. 499 *sq.*
Addresses delivered under difficulties, i. 413, 466
"Administrative Nihilism," i. 357, 368
Admiralty, parsimony of, in 1846, i. 29; their dealings with Huxley, 54, 56, 58, 60 *sq.*, 71-5, 100, 118
Advice to would-be writer on scientific subjects, ii. 393
Agassiz, Alexander, at *x* Club, i. 258; visit to, 463
Agassiz, Louis, and creation, i. 169; on glaciers, i. 409
Agnosticism, formulated in 1860, i. 217 *sq.*; controversy on, ii. 221-30; restated, 279 *sq.*
Airy, Sir G. B., P.R.S., ii. 50
Albert, Prince, at British Association, i. 155
Alcohol, use of, ii. 232
Alford, Dean, and Metaphysical Society, i. 314
Allman, Dr. George J., on Huxley's leading discovery, i. 40; 131; President British Association, 1879, ii. 5
America, visit to, i. 459-69; sight of New York, 461; at Yale, *ib.*; friends, 461-64; at Niagara, 464; visits his sister, 465; at Baltimore, *ib.*; lectures at New York, 467 *sq.*
American Civil War, i. 251; suggests article "Emancipation, Black and White," 262
Amroth, i. 129
Anglesey, Marquis of, at Wellington's funeral, i. 102
Angus, Dr., on School Board, i. 342
Animal motion, lecture on, i. 154
Animals and plants, i. 230
"Animals as Automata," i. 409, 411 *sq.*; delivered without notes, 413
Anthropological Institute founded, i. 263
Anthropological Society amalgamated with Ethnological, i. 263; 274
Anthropologie, Société d', of Paris, i. 273, 274
Anthropomorphism, i. 239
Ape question, at Oxford, i. 178-89; papers and lectures on, 190 *sq.*; *Punch* squib, 191, 200; at Edinburgh, 192 *sq.*; leads to ethnological work, 197 *sq.*; conclusion of, 199
"Apologetic Irenicon," ii. 300 *sq.*
Appletons, and copyright, i. 283; visit to, 461
Arbitration Alliance, letter to, on the reduction of armaments and the real causes of war, ii. 374
Archetype reviewed by H. Spencer, i. 161
Argyll, Duke of, in Metaphysical Society, i. 314; on "Law," ii. 157; reply to, 158; on coral reef theories, 158-60; further controversy with, 271
Aristotle compared with Darwin, i. 480; certain errors attributed to, ii. 1 *sq.*; estimate of the MSS. of, *ib.*
Armstrong, Sir Alexander, at Haslar, i. 24
Armstrong, Lord, visits to, i. 302, 460, 479; and a Newcastle society, ii. 62
Arnold, M., letters to—a lost umbrella, i. 311; *St. Paul and Protestantism*, 329; on death of his son, 370
Arolla, first visit to, ii. 137 *sq.*; second visit to, 169 *sq.*

Aryans, origin of, ii. 269
Ascidians, new species of, i. 57; Doliolum and Appendicularia, 75; on the structure of, 76; catalogue of, 148
Ashby, Mr., on sanitary work, ii. 67
Ashley, Hon. E., Vivisection Bill, i. 436
Atavism, defence of the word, i. 204
Athanasian Creed, anecdote, i. 472
Atheism logically untenable, i. 241, 412; ii. 162
Athenæum Club, elected to, i. 150
Augustan epoch to be beaten by an English epoch, i. 160
Automatism, Darwin suggests he should review himself on, ii. 38
Auvergne, trip in, i. 390 *sqq.*; glaciation in, 392; prehistoric skeleton at Le Puy, *ib.*

Babbage, calculating machine, and the theory of induction, ii. 261 *sq.*
Bacon, influence of, i. 298; character, ii. 14
"Baconian Induction," criticism of, i. 485 *sq.*; Spedding on, 486-88
Baer, von, influence of, i. 103, 163; his Copley Medal, i. 302; his work, ii. 39
Bailey, F., at Lynton, ii. 42
Baillon, led to make fresh observations through Huxley's gentian paper, ii. 201
Bain, Professor A., i. 258, 407
Balaam-Centaur, i. 452
Balfour, Right Hon. A., critique on his *Foundations of Belief*, ii. 395-400
Balfour, Francis, death of, ii. 37; obituary, 60; likeness to Huxley, *ib.*; looked to as his successor, 38; opinion of, 397
Ball, John, with Huxley at Belfast, i. 413 *sq.*
Ball, W. Platt, letter to—criticises his *Use and Disuse*: advice as to future work, ii. 267
Baptism, i. 223
"Barriers, The Three," i. 196
Barry, Bishop, on Huxley's work on the School Board, i. 340, 350
Bastian, Dr. H. Charlton, on spontaneous generation, i. 331, 333
Bateson, Mr., letter to—his book *On Variation* returns from speculation to fact: *natura facit saltum*, ii. 372
Bathybius, i. 295 *sq.*, ii. 5 *sq.*, 160; not accepted in connection with Darwin's speculations, ii. 5 *n.*; "eating the leek" about, 5 *sq.*
Baynes, Thomas Spencer, letters to—Aberdeen Address, i. 407; parsons at Edinburgh lectures, 444; regime for health, 446; arrangements for the *Encyclopædia*, 449; articles for *Encyclopædia*, 450-55; work on Dick Swiveller's principle, 450; handwriting, 451; puts aside a subject when done with, 451, 453; a Balaam-Centaur, 452; Dean Stanley's handwriting, 453; articles between H and L, 454; sons-in-law, 454; Biology contrasted with Criticism, etc., 452; reports of his American trip, 469; Harvey article, 485
Beale, Professor, i. 182, 183
Beaufort, Sir F. (Hydrographer), assistance from, i. 56, 58, 72, 73
Beaumont, Elie de, contradicted by nature, i. 373
Belemnites, on, i. 473, 483
Bell, Thomas, ready to help, i. 60, 62, 81; as man of science, 94; writes official statement on the award of Royal Society Medal to Huxley, 103; 233
Bence Jones, Dr., kindness of, i. 225; would make the Fullerian Professorship permanent, 292; friendly conspiracy, 371 *sq.*
Bennett, Risdon, and F.R.S., ii. 110
Bentham, G., at *x* Club, i. 258
Benvenuto Cellini, ii. 85
Berkeley, i. 243; proposed book on, ii. 80
Berkeley, Rev. M. F., mycological work, i. 331 *sq.*
Besant, Mrs., exclusion from University College, ii. 56
Besant, Sir W., Huxley's face, ii. 435 *n.*
Bible-reading in elementary schools, i. 339, 342-46, ii. 9, 299
Biological teaching, revolutionised, i. 376 *sqq.*; Darwin on, 381
Biology, on the study of, i. 470
Birds, distention of air-cells in flight, i. 213 *sq.*; investigations into the structure of, 227; classification of, 285, 286; toothed, proposed lecture on, i. 469; geological history of, 473
Birds and reptiles, relations of, i. 294, 302, 337
Birmingham, address on Priestley, i. 4, 408; opens Mason College, ii. 13
Blackie, Professor, goes with, to Skelton's, i. 478
Blaythwayt, R., "The Uses of Sentiment," ii. 410
Body, "a machine of the nature of an army," ii. 33
Bollaert, i. 201
Book, a good, and fools, i. 300

Booth, General, "Darkest England" scheme, ii. 271; compared to Law's Mississippi scheme, 272
Bowman, Sir William, retiring from King's College, i. 107; death of, ii. 332
Bradlaugh, Charles, view of, ii. 56; cp. i. 323
Bradlaugh, Miss, exclusion from University College, ii. 56
Bramwell, Sir F., on technical education, i. 475
Brewster, Sir David, criticism of Darwin, i. 194
Bright, John, speeches, i. 478
Bristol Channel, report on the recent changes of level in, i. 143
British Association, at Southampton: Huxley's first paper, i. 28
at Ipswich, i. 72, 80 *sq.*
at Belfast, 1852, i. 80
at Liverpool, 1853, i. 113
at Aberdeen, i. 155
at Oxford, 1860, i. 179 *sqq.*
at Nottingham, i. 277; science in public schools; President Section D, *ib.*
at Dundee: working men's lecture delivered by Tyndall, i. 291
at Norwich: Bathybius, i. 295 *sq.*; "A Piece of Chalk," 297; Darwinism, *ib.*
at Exeter, i. 313
at Liverpool: Huxley President, i. 331 *sq.*
at Edinburgh, i. 357
at Belfast, i. 412 *sqq.*; address on Animal Automatism, *ib.* 414; paper on *Columella auris*, 415
committee on vivisection, i. 436
at Dublin, i. 494; address on Anthropology, *ib.*
at Sheffield: Huxley "eats the leek" about Bathybius, ii. 5 *sq.*
at York: address on "Rise and Progress of Paleontology," ii. 34
at Plymouth, invitation for, ii. 200
at Oxford, 1894: speech on growing acceptance of evolution, ii. 375-79
British Museum, Natural History Collections, i. 160; *ex officio* Trustee, ii. 66
Broca, P., advice as to anthropological scheme, i. 274; language and race, ii. 270
Brodie, Sir Benjamin, i. 184, 188
Brodie, Professor (afterwards the second Sir B.), i. 182
Brodie, Rev. P., letter to—local museums, i. 136
Brodrick, Hon. G., letter to, on Linacre chair, ii. 30; visit to, 379; letter to—reason for accepting P.R.S., 52
Brooks, Mr. and Mrs., meeting with, i. 464
Brown, Alfred, South African geologist, i. 275
Brown Séquard at Oxford, i. 196
Browning, his music, ii. 338
Bruce, John, visit to, i. 443; in Edinburgh, 478
Bruny Island, i. 51
Bryson, Dr., i. 96
Büchner, L., i. 201
Buckland, Frank, succeeds as Fishery Inspector, ii. 20
Buckland, Mrs., discovers an Echinoderm, i. 125
Buffon, on style, i. 297; appreciation of, ii. 39, 408
Bunbury, Sir C., i. 169
Bunsen, i. 103
Burnett, Sir William, Director-General Navy Medical Service, interviews with, i. 23, 35, 58; letter to, 73
Burns, John, and poem on Tennyson, ii. 339
Burton, Edward, letter to—advice against building disregarded, i. 383, 384
Busk, G., stays with, i. 113, 125; on Snowdon with, 144; joint translation of Kölliker, 159; *also* i. 223, 224, 226, 255, 256; *x* Club, ii. 119
Butler's *Analogy*, i. 241, ii. 15

Cabanis, i. 243
Cairns, Professor, i. 211
Calcutta, museum appointment, i. 303
Calvanism in science, i. 328
Campbell, Professor Lewis, letters to—value of Mariner's testimony about the Tongans, ii. 124; Oxford British Association, 1894, stronghold of the priesthood in opposing scientific method, 379
Campbell, Mrs. L., letter to—hybrid gentian on a nameless island in Sils Lake, ii. 380
Canaries, trip to, ii. 251-57
Cardwell, Lord, vivisection question, i. 437-39
Carlyle, influence of, i. 9, 13, 15, 275, ii. 34, 268; Edinburgh LL.D. with Huxley, i. 275; hatred of Darwinism, 276; death of, ii. 34
Carlyle, Mrs., saying about Owen, ii. 167
Carnarvon, Lord, Vivisection Bill, i. 440
Carpenter, Rev. Estlin, letter to—acknowledges his book, *The First Three Gospels*: historical basis of Christianity: comparison of Nazarenism with Quakerism, ii. 266
Carpenter, W. B., approves of his views,

i. 92; support for F.R.S., 96; dealings with, about the Registrarship of London University, 111; at his marriage, 129; Examiner at London University, 148; at Lamlash Bay, 155; and Bathybius, 296
Carus, Victor, corresponds with, i. 150; *also* 162, 201; takes Wyville Thomson's lectures in 1874, 442
Casino, Prince of, at British Association, Ipswich, i. 90-92
Cassowary, rhyme, ii. 335
Cats, love for, i. 53
Cavendish, Lord F., assassination of, ii. 45
Cell theory, review of, i. 140
Celt question, i. 325 *sq.*
Challenger expedition, and Bathybius, i. 296; some results of, 442
Chamberlain, Right Hon. Joseph, asked to Royal Society dinner, ii. 61
Chambers, Robert, at Oxford, 1860, i. 180, 187
Chamisso, quoted, i. 48
Chandler, Dr., apprenticed to, i. 15, 16
Chapman, the publisher, i. 120, 121
Cherubim, and terrestrial creation, i. 312 *n.*
Chess player, nature compared to a hidden, i. 298
Chichester, Bishop of, on Huxley's search after the Ur-gentian, ii. 138
Christian dogmas, i. 241
Christianity, "development" of, ii. 224 *sq.*, 228 *sq.*; demonology of, 225; historical basis of, 261; comparison with Quakerism, 267
Chrystal, Professor, to help in Men of Science Series, i. 499
Church Army, answer to appeal for subscription to, ii. 393
Church, Established, and our simian origin, ii. 383
Churchill, the publisher, i. 85
City and Guilds Institute, i. 474 *sq.*
City Companies and education, i. 474 *sq.*; ii. 50
Clark, Sir Andrew, M.D., at Haslar, i. 24; successful treatment by, 373, 444, ii. 418; meets on return from Italy, ii. 103; advises retirement, 104; on Clifford's illness, i. 501; election as F.R.S., ii. 110
Clark, Sir J., help from, i. 79
Clark, J. W., Master of the Salters' Company, letter from—education, ii. 50
Clarke, Hyde, letters to — Ashantee War and ethnology: Huxley no longer attending to anthropology, i. 402; aim of Genesis controversy, ii. 117
Clarke, Legros, evolution and the Church, ii. 56 *n.*
Clayton, W. P., letter to—moral duty and the moral sense: influence of Franklin and Fox compared, ii. 305
Clergy and physical science, i. 307
Clericalism, ii. 234, 378
Clerk Maxwell, to help in Men of Science Series, i. 499 *sq.*
Clifford, W. K., i. 258, 314, ii. 3; his friends rally to, in his illness, i. 501; opinion of, ii. 397
Clifford, Mrs., letters to—a difficulty, ii. 8; the P.C.: a spiritual peerage, ii. 325; human nature, 428
Clodd, Edward, note on secular education, i. 343; letters to—his book, *Jesus of Nazareth*: Bible reading, ii. 8; reply to condolence on his daughter's death, 180; Positivism: will devote his remaining powers to theological questions, 229; Baur's merit: proposes work on the three great myths, 230, cp. 260; legal aspect of the "Darkest England" scheme: controversy and waste of time, 273; new edition of "Bates": alleged ignoring of distinguished men by Royal Society, 343; *Man's Place* after thirty years, 344; answering letters: Kidd on Social Evolution: Lord Salisbury at Oxford, 383
Cobden, Richard, i. 150; and International College, 269
Cole, Sir Henry, the humour of public affairs, ii. 324
Colenso, Bishop, Bishop Wilberforce on, i. 202; *also* 239, 258, ii. 35
Coleridge, Lord, i. 218; and vivisection, ii. 241
Collected Essays, review of, by Professor Ray Lankester, ii. 371
Collier, Hon. John, letters to—the "Apologetic Irenicon": art in London University, ii. 306; a pertinacious portrait painter, 331; effect of influenza on personal appearance: the Romanes Lecture an egg-dance, 355
Collier, Hon. Mrs. John, letters to—a country visit, ii. 63; secretarial work: incidents of travel, 83; Naples: violent changes of weather, 86; secretarial work: Catherine of Siena, 96; end of Italian trip, 101; prize at the Slade School: return from Maloja, 206; the Canaries, 255; objects of the seashore, 293, 294; the P.C., 324; the cat, 348; nonsense letter, 439; an Oxford training, 441

Collier, W. F., letters to—proposed visit to, ii. 78; a touching mark of confidence, 200; law of Deceased Wife's Sister: Shakespeare and the sexes of plants, 218; the P.C.: "What is honour?": a new Beatitude, 327; visit to, 252
Collings, E. T., letter to—alcohol as a brain stimulant, ii. 232
Collings, Right Hon. Jesse, his mother and the P.C., ii. 328
Commission, Medical Acts, ii. 31, 40; report of, 40, 41
Commission, Scottish Universities, i. 477 *sq.*, 489
Commissions, Royal, i. 323 *sq.*, 397; Fisheries, 201, 234, 238, 249, 253; on Science and Art Instruction, 302; on Science, 390; on Trawling, ii. 26; Fishery, of 1883, 59, 60
Common, T., letter to—Nietzsche: German work and style: morality and evolution, ii. 360
Comparative anatomy, letter on, i. 148
Comte, criticism on, i. 299 *sq.*; would need re-writing, ii. 426; typical of the century? 374
Comtism, defined as "Catholicism without Christianity," i. 299
Comtists, opinion of, ii. 396, 397; *see also* Positivism
Conditions, influence of, ii. 127
Congreve, controversy with, i. 299
Controversy, opinion of, i. 251, 288, 482, 488, ii. 273; and friendship, i. 385, ii. 175; exhilarating effect of, ii. 95, 115, 116, 122, 145; aim of, 225, 235; in self-defence, 427
Controverted Questions, ii. 298; labour of writing the prologue, *ib.*; elimination of the supernatural, 299
Cook (editor of *Saturday Review*), i. 177, 247
Cooke, Dr., his brother-in-law, i. 6; his first instruction in medicine, 15, 33
Copley Medal, awarded to Huxley, ii. 202
Corfield, R., on Clifford's illness, i. 501
Cork, rejected for chair at, i. 79
Cornay, Professor, acknowledgment from, i. 285
Cornu, Professor, at *x* Club, i. 258
Courtney, Right Hon. L., at Royal Society dinner, ii. 61
Coventry, the home of Thomas Huxley, i. 1; George Huxley returns to, 6
Craniology, i. 238
Cranks, letters from, ii. 42 *sq.*
Crayfish, on the, i. 132, 398, 490, ii. 1
Creation, controversy on Genesis i. with Mr. Gladstone, ii. 114 *sqq.*, 122; *also* 302
Criticism, a compliment, i. 157
Croonian Lecture, i. 160, 161, 163
Cross, Lord, letter to—Vivisection Commission, i. 439
Crossopterygian fishes, i. 153
Crowder, Mrs., visit to, ii. 357
Crum Brown, Professor, induces Huxley to play golf, i. 363
Crustacea, paleozoic, i. 148
Culture, basis of, ii. 13 *sq.*
Cunningham, on South American fossil, i. 312
Cuno, language and race, ii. 270
Cuvier, his views controverted, i. 149, 154; and his title, 359; appreciation of, ii. 39
Cuvier, the British, i. 161

Dalgairns, Father, in Metaphysical Society, i. 314
Dalhousie, Lord, President Royal Commission on Trawling, ii. 26
Dana, and coral reef theories, ii. 159; misunderstanding of Darwin in his obituary of Asa Gray, 192, 193
Daphnia, i. 148
Darwin, Charles, likewise begins his career at sea, i. 29; as man of science, 94, 95; saying about happiness and work, 129; 157; starts on the *Origin*, 159; effect of the *Origin*, 167-70; the species question before 1859, 169; the most serious omission in the *Origin*, 171; Huxley his "general agent," 171, 276, his "bulldog," 363; and his predecessors, 200; 223; and poetry, 225; compared with Lamarck, 227; and spontaneous generation, 244; at *x* Club, 258; his opinion of Dohrn, 327; his generosity, 418; "the cheeriest letter-writer I know," ii. 12; letter to, obtaining a Civil List pension for Wallace, 14; death of, 37; notice of, in *Nature*, 38; love for, *ib.*; intellect of, 39; obituary, 60; compared to Gordon, 95; unveiling of statue, 112; character and friends, 113; influence in science, 162; exposition not his forte, 190; dumb sagacity of, *ib.*; legacy from A. Rich, 286; his theory needs experimental proof, 291; and *natura non facit saltum*, 372; typical of the century? 374; nature of his work, 378; example of, 390; defence of, 427
Letters from—the decisive critics of the *Origin*, i. 166; Huxley's reservations in accepting the doctrine

of the *Origin*, 207; on Huxley's treatment of Suarez' metaphysics: intellect of Huxley, 365; on new biological teaching, 381; on report of séance, 423; automatism, ii. 38
Letters to—on the *Origin*, i. 175; Edinburgh lectures, 194, 195; the Cambridge British Association, 198; on *Man's Place:* Atavism, 204; that his theory accounts for retrogression as well as progression, 205; 206; pressure of work, 245; 249; absorption in one kind of work, due to one's reputation and one's children, 250; "Criticisms of the *Origin*," 253; Copley Medal, 254; difficulty of writing a book, 264; birth of a son: work in the *Reader*, 265; sends booklet, *ib.*; Darwinism in Germany, 266; *Pangenesis*, 267, 268; laziness: Hooker ill, 268; memorial about Gallegos fossils, 276; new edition of *Origin:* Jamaica affair, 278; on Positivist critics, 299, 300; visit from Darwin, 305; no time to read, 306; loses sight of naturalists "by grace of the dredge," 312; South American fossils, *ib.*; Exeter British Association, 313; societies: the Celt question, 325; on Oxford D.C.L., 330; on *Descent of Man, and Sexual Selection*, 359; inconvenience of having four addresses, 385; on a friend's illness, 403; note for the *Descent of Man:* Dohrn's Station: projected visit to America, 418; W. G. Ward's saying about Mill, 419; report on spiritualistic séance, 420 *sq.*; attack in *Quarterly*, 426; on vivisection, 437, 438, 439, 440; instructions for Polar expedition, 447; on theological protest, 471; his degree at Cambridge, 479; "Coming of Age" of the *Origin*, ii. 12; cuts out a sharp retort, 14; on Wallace's pension, *ib.*; optimism and pessimism, 15
Darwin, Mrs., visit to, ii. 287
Darwin, Miss E., on Huxley's books, i. 264, 265, 278
Darwin, Francis, letter to, on the British Association Meeting of 1860, i. 187; visit to, ii. 164
Darwin, Professor George, at séance, i. 420 *sq.*
Darwin tree, the, ii. 169
Daubeny, Dr., at Oxford, 1860, i. 180, 188, 189
Davies, Rev. Llewelyn, at Huxley's funeral, ii. 403
Dayman, Lieutenant, formerly of the *Rattlesnake*, i. 88; on Atlantic mud, 295
De la Beche, Sir Henry, i. 63; 113, 114, 132
De Maillet, i. 200
De Quatrefages, i. 150
Deceased Wife's Sister Bill, ii. 217-19
Derby, Lord, i. 73
Descartes' Discourse, Commentary on, i. 328
Design, ii. 188, 189; argument from, 57
Devonian fishes, i. 211
"Devonshire Man" controversy, i. 325
Dewar, Professor, liquid oxygen, ii. 362
Dingle, Mr., at Oxford, 1860, i. 182
Diphtheria, outbreak of, i. 492 *sq.*
Docker, the scientific, letter to, ii. 365; tries to help, 366 *sq.*; letter to—atoms and the evolution of matter, ii. 382
Dog, on the, i. 398; projected work on, 490; problems connected with, ii. 10; further work on, *ib. sq.*
Dohrn, Dr. Anton, visit of, i. 290; visit from, in 1868, 302; absent from Naples on Huxley's visit, ii. 84
Letters to—matrimony: Tennyson: his kindness to children, i. 291; scientific investigators and museum work: family news: criticism of Kölliker, 303; Calcutta Museum: Kölliker and the *organon adamantinae*: family news, *ib.*; a bad letter-writer: Goethe's Aphorisms: Dohrn's work and English, 326; marine stations at Naples and Brighton: spontaneous generation: Huxley, devil's advocate to speculators: a "Töchtervolles Haus," 332; British Association at Liverpool: Franco-Prussian War, 334; microscopes: Franco-Prussian War, 336; School Board: "an optical Sadowa," 361 *sq.*; illness of 1871, 367; the visit to Naples: Ceylon Museum, 373; beefsteaks and wives not to be despised, 374; Ceylon Museum: his father's illness: his capacity, 375; invitation to Morthoe, *ib.*; books for the Aquarium, 376; the new laboratory, 379; England not represented at his station: visit from von Baer: lawsuit: Kleinenberg on Hydra, 399; subscriptions for station: prefers his German to his English: hesitation, 400; his marriage: the station: Darwin's generosity, 417; death of Darwin and Balfour, ii. 38; naval officers

and scientific research, 42; health: age: earning an honest sixpence, 148
Dohrn, Dr., sen., i. 371; visit to, at Naples, *ib. sq.*; vigour of, 375
Donnelly, Sir John, K.C.B., visit to, ii. 362
Letters to—vivisection, i. 431, 432; Fishery appointment, ii. 21; title of Dean: a wet holiday, 36; retired officers in administrative posts, 46; unofficial answer to official inquiries, 72; proposed resignation, 73; industry and age, 74; health: Gordon, *ib.*; reply to arguments against resignation, 75; extension of leave: festa of St. Peter's chair, 90; coldness of Rome: repression of dynamiters: Roman noses, 92; Gordon: public affairs: technical education: depression: carnival, 94-96; health, 99; return from Italy, 103; Civil List pension, 109; return in good health from Arolla: renews work at science instead of theology, 138; Science and Art examinations, 141, 235; age moderates hopes, 150; Imperial Institute, 154; the Irish question, 168; Glion: "javelins," 171; sends proof of *Struggle for Existence*, 187; Deceased Wife's Sister Bill: hatred of anonymity, 219; Stonehenge: use of Radicals: death of Smyth, 260; move to Eastbourne, 262; London University Commission and reform, 311; the State and intermediate education, 319; responsible for the Privy Councillorship, 323: humour of public affairs, *ib.*; the modern martyrdom, 332; faculty of forgetting, 335; the scientific docker, 366; death of Tyndall, 369; letter from a lunatic, 372; a State evening party, 373; procrastination: the scientific docker: Darwin Medal, 387; women in public life, *ib.*
Draper, Dr., i. 181
Drawing, Huxley's faculty for, i. 4, 43, 269, 415
Dublin, LL.D. at, i. 495
Duncan, Dr. Matthews, visit to, i. 362
Dyer, Sir W. Thiselton, helps in the new science teaching, i. 378 *n.*; lectures for Huxley, 380; to help in Men of Science Series, 499; letter from—Gentian paper, ii. 201; letter to—on Marine Biological Association, 195
Dyster, Dr., letters to—scientific Calvinism, i. 113; introduction to Kingsley and Maurice, 121; refuses Edinburgh chair: coast survey, 122, 123, 124; approaching marriage, 125, 126; popular lectures, 138; man not a rational animal in his parental capacity, ii. 180

Ealing, i. 1
Eastbourne, house at; law of nature about; origin of name, ii. 276
Echinoderms, on the development of, i. 75; aim of paper, 92
Echo, article in, i. 478
Ecker, Dr. A., on his ethnological work, i. 273
Eckersley, W., letter to—Civil List pension, ii. 109
Eckersley, W. A., death of, ii. 402
Eckhard, Dr., i. 164
Ectoderm and Endoderm, discovery of, i. 39, 40
Edinburgh, lectures at—on the Ape question, i. 192 *sq.*; on the Physical Basis of Life, 299; Fishery Exhibition, ii. 29; refuses an uncertain post at, i. 114; refuses to succeed Forbes there, 117, 119, 120, 123, 124; Natural History courses at, i. 442 *sq.*, 456 *sq.*
Edinburgh University, hon. degree, i. 275
Edison, typical of the century? ii. 374
Education, the true end of, i. 298; secular, 343, and note; intermediate, and the State, ii. 319; scientific, for a boy, 319, 321
Egerton, Sir Philip, his museum, i. 133; visit to, 177; squib on the Ape question, 192, 200
Egyptian exploration, ii. 62
Ehrenberg, suspects Bathybius, i. 447
Eisig, assistant to Dr. Dohrn, ii. 84
Elementary Physiology, i. 246, 283, ii. 1; new edition, ii. 69, 82
Eliot, George, proposed burial in Westminster Abbey, ii. 18; Stanley on, 31

Ellicott, Bishop of Gloucester, in Metaphysical Society, i. 314
Ellis, Charles, with Huxley in Egypt, i. 371
"Emancipation, Black and White," i. 262
English literature, teaching of, letter on, ii. 284
English Men of Science Series projected, i. 498 *sqq.*
Enniskillen, Lord, i. 201
Erasmus, opinion of, ii. 395, 430
Erebus and *Terror*, Hooker on, i. 56
Erichssen, Professor, on Vivisection Commission, i. 439

Ethnological Society, President of, i. 263; presidential address, 307; amalgamation of two societies, 324
Ethnology, work on, i. 197, 198, 249, 262, 273-74, 285, 324, 326; Sir M. Foster on, 263; systematic series of photographs, 307; definition of, 324; attention turned away from, in 1873, 402
Eton, new Headmaster, and future of, ii. 134; Huxley a Governor of, 3, 207; examinations, 235
Europeans, alleged inferiority of senses in, ii. 268
Evans, Sir J., on Marine Biological Association, ii. 195, 196
Letters to—getting in harness a tonic: need of rest, ii. 79; Ravenna: takes up Italian again, 85; work of Royal Society Secretary, 87; a growl from Italy, 99 *n.*; description of pleurisy, 166 *n.*; delay over *Spirula* and Darwin obituary, 190; Copley Medal: Geological Congress: punnigrams, 211; pliocene and miocene man: language no test of race, 270; a forgotten subscription, 349
Evolution, article for *Encyclopædia*, i. 453, 479; lectures on, at New York, 468; demonstrative evidence of, *ib.*; accumulation of evidence for, ii. 12; laws of, applied to the arrangement of the Vertebrata, 12, 450; theory must have been invented by latter paleontologists, 34; illustrated by the Pearly Nautilus, 57 *sq.*; experimental, 291, 292
Evolution and morality, ii. 360
"Evolution of Theology," ii. 123
Evolutionary thought builds up as well as pulls down, ii. 299
Examinership under Science and Art Department, ii. 156 *sq.*, 214, 235-36
Exodus, the real story of, ii. 62
Eyre, Governor, i. 279-83

Faith, the sin of, ii. 404
Falconer, Dr. Hugh, i. 255
Family motto, *tenax propositi*, ii. 4, 5
Fanning, Mrs., i. 180
Fanning, William, his friend in Sydney, i. 36, 37; death of, ii. 166
Fanning, F., visit to, ii. 357
Faraday, Michael, interview with, i. 21, 99; 156, 157; and titles, 359; influence in science, ii. 162; the knowledge of popular audiences, 358
Farrar, Dean, on science in public schools, i. 277, 308; at Sion House meeting, 302
Farrar, Rev. Professor, account of the Oxford British Association, 1860, i. 182, 189
Farrer, Lord, letters to—official folly: fallacies tenacious of life, ii. 9; Fishery appointment, 21; Gladstone controversy: ignorance of the so-called educated classes, 115; effect controversy on health, 116; the Cassowary rhyme, 335; his elevation to the peerage: criticism of Romanes Lecture, 358; the Devil Prince of this Cosmos: *a priori* reasoning: the Established Church and our simian origin: attack on the School Board compromise, 383; the *a priori* method an anachronism: method of the Political Economists and Eubiotics: growing hopefulness in age, 384; aim of the chapter in Owen's *Life*: hint for an essay on Government: London University reform, 392
Fawcett, Professor, stays with, i. 198
Fayrer, Sir Joseph, settles his career for him, i. 23, 251; great anthropological scheme, 273; invites Huxley to Calcutta, *ib.*; ethnological photographs, 307
Letters to—Indian Canidae, ii. 11; 273; the P.C.: career due to his suggestion, 326
Felixstowe, visits, i. 90; Mrs. Huxley at, 198
Fichte, i. 218
Filhal, M., work on Natural Selection, ii. 13
Fish, immature, ii. 234
Fisheries, appointed Inspector of, ii. 20; duties, 22 *sq.*; deep sea, require no protection, 24, 28; salmon, protection, 24; experiments, *ib.*
Fisheries, Report on, i. 148; old fallacies in reports, ii. 9; experimental station at Lamlash Bay, i. 155
Fishery business, ii. 48, 68
Fishery Exhibition, lesson of, ii. 24 *n.*; at Norwich, 27 *sq.*; at Edinburgh, 29; in London, 49
Fishes, development of the skeleton in, i. 153 *sq.*
Fishmongers' Company and education, ii. 49
Fiske, John, visit to, i. 464
FitzRoy, Admiral, Darwinism and the Bible, i. 187
Flood myth, ii. 260, 279
Flourens reviewed, i. 249
Flower, Sir W. H., on the simian brain at Cambridge, 1862, i. 189, 190, 198, 201; on Huxley's work for Hunterian Lectures, 236; curator of Natural History Collections, 248;

character of, 249; Kingsley should get to know him, 276; evolution and the Church, ii. 56 *n.*
Letters to—examinership at College of Surgeons: Dijon museum, i. 235; Hunterian Lectures, 312; anatomy of the fox, ii. 11; Linacre professorship, 30; acceptance of P.R.S., 52, 53; "Ville qui parle," etc., 66; retirement, 105; refuges for the incompetent: Civil Service Commissioners: treatment by the Royal Society, 212; promotion by seniority, 295; university reform, 313; the P.C.: Salisbury P.C.'s received by Gladstonians (cp. 329): kinds of pleurisy: official patronage: illness of Owen, 326; Owen's work, 341
Foote case, ii. 406
Forbes, Professor Edward, introduction to, i. 25, 27; seemingly forgotten by, 39; visits, 58; support from, 60, 62, 80, 89; helps to F.R.S., 66, 67; his pay, 68; goes to Edinburgh, 86; life of the Red Lion Club, 87; writes notice of Huxley, 91; on Huxley's views, 92; character of, 94, 95, 96, 107, 115, 118; is succeeded by Huxley, 108, 118; death of, 115 *sq.*; *also* 99
Letters from—Huxley's *Rattlesnake* work, i. 59; on Royal Medal, 109
Letters to—Royal Medal, i. 103, 109 (cp. ii. 408); *also* 113, 114
Forbes, Principal James, structure of glaciers, i. 147, 150; and Tyndall, 409
Forel, Professor, at Arolla, ii. 169
Forster, Right Hon. W. E., on Bible teaching, i. 344; vivisection at South Kensington, 430 *sq.*; letter to, 433
Foster, Sir M., on the spirit of Huxley's early inquiries, i. 103; on his "Review of the Cell Theory," 140; and "Theory of the Vertebrate Skull," 141; on the Oxford meeting of the British Association, 189; on Huxley as examiner, 238; on his ethnological work, 263; takes over Fullerian Lectures, 293; on Huxley's work on birds and reptiles, 294, 303; on Huxley as Secretary of the Royal Society, 356; takes over his lectures, 367; helps in the new science teaching, 378; a New Year's guest, 388; on Huxley's work after 1870, 398 *sq.*; with him at Belfast, 412-14; to help in Men of Science Series, 499; assists in preparing new edition of *Elementary Physiology*, ii. 69; and London University Commission, 311; "discovery" of, 397
Letters from—retirement at sixty, ii. 109, 120; society at Maloja, 204
Letters to—Edinburgh lectures: vivisection: Bathybius suspected, i. 446; official functions not his business in life, ii. 49; successor to Spottiswoode, 51; reluctance to divide the Royal Society over his election as President, 54, elected, 55; support of debateable opinions while P.R.S., 56; handwriting and anxiety, 58; holiday defined, 59; Science and Art examinations, *ib.*; on Senate of London University, *ib.*; obituaries of F. Balfour and Darwin, 60; Royal Society anniversary, *ib.*; Egyptian exploration society, 62; new edition of *Elementary Physiology*, 70; sensation, *ib.*; resignation of P.R.S., 71; swine miracle, *ib.*; health, 72; proofs: resignation: Jeremiah and dyspepsia, 78; "vis inertiæ," 79; ordered abroad, 79, 80; Venice, 81; November in Italy, 83, 85; papal Rome: health, 86; depression: will turn antiquary: Royal Society Secretary, 89; *Elementary Physiology*, new edition: Italian archæology: visits the Lincei, 93; preface to *Elementary Physiology*: Gordon's idea of future life: carnival, 94; birthday wishes: upshot of Italian trip: looks forward to becoming a lodge-keeper: *Elementary Physiology* published, 98; returns home: continued ill-health, 103-105; impending retirement, 106; medical men and F.R.S., 111; social meetings of Royal Society, *ib.*; science at Oxford, 119; a scientific Frankenstein, 128: visit to Ilkley, 129; paleontological museum, 131; renewed ill-health: scientific federation: reorganisation of Fisheries Department, 132; rejection of Home Rule Bill, 136; "Huxley sulphide" at Harrogate, *ib.*; visit to Arolla: death of a visitor: British Association and Australia: renewed desire for work, 138; transference of sensation: obstinate fictions of examinees, 140; Delta borings: gentians, begs specimen: distribution of, 143; apology for intervention, 147; Royal Society and Imperial Institute Committee, 154; Science and Art examinations, 156 *sq.*; pleurisy his Jubilee honour, 166; convalescence: Marine Biological Associa-

tion, 168; Arolla, 169; gentians and idleness, 171; the P.R.S. and politics, 174; at Hastings: Delta borings: Antarctic exploration, 177; keeps his promise to speak at Manchester, in spite of domestic loss, 180; technical education, address at Manchester, 181; Hooker's work on Diatoms, 182: London University reform, 189; *Spirula*: Darwin obituary: "paper philosophers," 190, 191; peculiar stage of convalescence: *Challenger* reports, 191; Darwin obituary finished: affection of the heart: an "unselfish request," 195; an amended paper compared to Tristram Shandy's breeches, *ib.*; a successor in presidency of Marine Biological Association, 196; Darwin obituary satisfactory: *Spirula*: death of Matthew Arnold, 196; open invitation to, as a friend of Huxley, 200; at Maloja: Copley Medal, 202; leaves Maloja, 203; unable to effect a meeting, *ib.*; return home from Maloja, 204, 205; compelled to live out of London: a cuttlefish of a writer, 208; climate of Eastbourne and *a priori* reasoning, 210; children and anxiety: stays away from Royal Society dinner, *ib.*; Science and Art examinations, syllabus: successor to Huxley, 214; Monte Generoso: his health, Sir H. Thompson on, 238; opposition to Technical Education Bill, 239; sends photograph: proposed trip to the Canaries, 250; reviews of Darwin, Alpha and Omega, 251; marriage and the wisdom of Solomon, 252: Booth business, a wolf by the ears: Salvationists and spies, 275; *Physiology*, Part 3: name of house: a supposed ancestor and benefit of clergy, 277; Maloja accessible to him only by balloon, 288; physiological omniscience, 290; unequal to public function, 294; physiology untrammelled at Royal College of Science, 312; Senate of London University and reform, 314; Privy Councillorship, 322; public functions and health, 333; sympathy for attack on, 342; Romanes Lecture: Harvey celebration: symptoms of influenza, 357; weakness after influenza, 363; *Nature* dinner: award of Darwin Medal, 386; avoidance of influenza: Gordon and the African fever, 398; joining the Horticultural Society, 445

Foundations of Belief, critique on, ii. 395-400

Fox, George, influence of, ii. 267; as compared with Franklin, 306

Francis, Dr. William, i. 78, 114, 120

Franco-Prussian War, i. 334, 336

Frankland, Sir Edward, i. 139, 257

Letters to—on *x* Club, 260; Spottiswoode's illness, ii. 50; vigour of "old fogies": Mentone earthquake, 163; habits of eels, 170; article on "Struggle for Existence," 187; on Royal Society federation scheme, 189

Franklin, B., influence compared with that of Fox, ii. 306

Free thought, ultimate success of, i. 397; tone of some publications, ii. 322, 406

Freemantle, Rev. W. H., account of the Oxford British Association, 1860, i. 186; controversy with, on Bible teaching, 343

French, knowledge of, i. 149

Froude, J. A., i. 330, 477, 479

Fullerian Professorship, i. 87, 138; resignation, 292

Galbraith, leaves *Natural History Review*, i. 209

Galileo and the Pope, ii. 113

Gallegos river, fossils at, i. 276, 312

Galton, Sir D., at *x* Club, i. 258

Galton, F., on Committee of the *Reader*, i. 211

Geary, i. 35

Gegenbaur, Professor, i. 164

Geikie, Sir A., sends proofs of the Primer to, i. 382

Gemmation, lecture on, i. 140

Genesis, controversy over, ii. 114; renewed in *Times*, ii. 296 *sq.*

Genius, men of, a "sport," i. 240; as an explosive power, 357

Gentians, study of, begun, ii. 137 *sq.*; continued, 201

"Geological Contemporaneity," i. 205

"Geological Reform," i. 310

Geological Society, Fellow of, i. 150; elected Secretary, 155

Geological Survey, work on, i. 143

George, H., *Progress and Poverty*, ii. 245, 248

German, knowledge of, i. 149, ii. 420

German speculation, research and style, ii. 360

Gilman, Professor D. C., i. 258

Glacier ice, paper on, i. 144

Gladstone, Professor J. H., account of Huxley's work on the School Board, i. 339 *sq.*

Gladstone, Right Hon. W. E., and Metaphysical Society, i. 314; not an expert in metaphysics, 318; the greatest intellect in Europe, 353; reaction from, 489; a graceful action, ii. 15; function of, 269; attacks Huxley in the *Impregnable Rock of Holy Scripture*, 270; swine miracle, 271; and Parnell, 274-76; typical of the century? 374
controversy with, on Genesis, ii. 114 *sqq.*; estimate of, 122; letter on—the ordeal of public criticism, 178; revived by others, 296 *sq.*
second controversy with, ii. 425, 427
Goethe, quoted, i. 151; on "thätige Skepsis," 169; his Aphorisms translated for the first number of *Nature*, 326; scientific insight of, ii. 408
Golf, Huxley plays, i. 363
Goodsir, Dr. John, as man of science, i. 94
Gordon, C. G., ideas and character, ii. 94, 95, 100; why he did not have the African fever, 394
Gordon, G. W., executed by Eyre, i. 279 *sq.*
Gore, Canon, ii. 269
Gosse, Edmund, anonymous reviewers, ii. 144
Grant, Dr., introduction to, i. 25; as man of science, 94; an early evolutionist, 168
Grant (friend of Dr. Dohrn), i. 400
Grant Duff, Sir M., letter from—possibilities of a political career for Huxley, i. 354; Lord Rector of Aberdeen, 389
Granville, Lord, letter from—appoints Huxley on London University Senate: anecdote of Clay, the whist player, ii. 59; a master of polished putting down, 167
Gray, Asa, misunderstanding of Darwin, ii. 192; appreciation of, 193
Gray, J. E., introduction to, i. 25, 27; support from, 82; a zoological whirlwind, i. 160
Green, T. H., i. 182; account of Huxley's speech at Oxford, 185
Green, of Leeds, to help in Men of Science Series, i. 499
Greene, Professor R., i. 164, 209
Gregory, Sir W. H., with, in Egypt, i. 269; Governor of Ceylon, 375
Greswell, Rev. Richard, i. 182, 183, 187
Grey, Albert, M.P., letter to, on Home Rule, ii. 124
Griffiths, Mr., Secretary British Association, i. 409
Grote, George, and titles, i. 359
Grove, Sir G., a criticism, i. 301
Gull, Sir W., and F.R.S., ii. 110
Gunther, Dr., i. 416
Gutzlaff, saying of, ii. 133, 142

Haeckel, Professor Ernst, his Gastraea theory, dependent on Huxley's discoveries, i. 40; Darwinism in Germany, 266; unable to attend British Association, 1866, 277; and Bathybius, 295 *sq.*
Letters to—on reading *Die Radiolarien*, i. 237; dissuades him from joining Arctic expedition: Darwinism: philological evidence in ethnology, 266, 267; on his *Morphologie:* controversy, 288; marriage: classification of birds: handwriting, 289; von Baer's Copley: reptiles and birds, 302; translation of his *Morphologie:* influence of children, 305; notice of the *Anthropogenie:* attack on Darwin in the *Quarterly: Amphioxus* and the primitive vertebrate, 424; *Rattlesnake* "collection": his *Medusae* unpublished: Crayfish: *Spirula:* his children, 491
Hahn, Father, reminiscences of Huxley's impartiality in teaching, ii. 405
Hamilton, on the unconditioned, i. 218, 242
Hand, lecture on, i. 490, 497
Harcourt, Sir W., letter to, suppression of physiological experiment, i. 434
Hardwicke, printer, i. 207-208
Harrison, F., in Metaphysical Society, i. 314; attacks agnosticism, ii. 221 *sq.*; controversy with: the "Apologetic Irenicon," 300 *sq.*; attack of, philosophically borne, 342
Harrison, J., letter to—science and agriculture, ii. 283
Hartington, Lord, science should be aided like the army and navy, ii. 153; technical education, 155; letter to—Deceased Wife's Sister Bill, 219
Hartismere, Lord, Vivisection Bill, i. 436
Harvey, i. 200; lecture on, 485, 488; article on, ii. 1; tercentenary, 362 *sq.*
Haughton, Professor S., leaves *Natural History Review*, i. 209
Hay, Sir John, visit to, at Tangier, i. 368
Head, Francis, "javelins," ii. 171
Healy, T., and Parnell, ii. 275
Heathorn, Henrietta Anne (*see* Mrs. T. H. Huxley), engagement, i. 36, 37; description of, 39; remote prospect

of marriage, 45, 46; arrives in England, 127
Heathorn, Mrs., i. 225
Helmholtz, *i.* 258
Helps, Sir A., i. 258
Henslow, Professor, i. 90, 91, 182, 183, 187; death of, 226; relation to Darwin, ii. 39
Herring, memoir on, i. 148; experiments as to the spawning of, 155; address on, ii. 28
Herschel, Sir John, i. 58
Hesitation, no good ever done by, i. 401
Hippocampus, i. 191, 200
Hird, Dr., presents testimonial to, ii. 68
Hirst, Thomas Archer, i. 225; and *x* Club, 257, 260, 261; character of, 389; Royal Medal, ii. 61; illness of, 196; death of, 331
Histology, work on, i. 148
Historical Association of Lancashire and Cheshire, presentation to Huxley, i. 335
Hobhouse, Lord, Huxley secures intellectual freedom, ii. 407
Hockenhull, Swanus de, ancestor of the family of Huxley, i. 2
Holiday, work, i. 363, 479, 494, 495; borne well, ii. 42; definition of, 59
Holland, Sir Henry, on Plato, ii. 426
Home Rule, letter to A. Grey, ii. 124; *also* 136, 176
Hooker, Sir J. D., his case a precedent, i. 29, 57, 58; at Ipswich, 90; at his marriage, 129; on Snowdon with, 144; relations with Darwin, 166; on species, 169, 170, 177; at Oxford, 1860, 182, 185, 187, 188; origin of friendship with, 215; remonstrates with Huxley on excursions into philosophy, 229; *x* Club, 257, ii. 119; clubs not for the old, *i.* 261; with Huxley in Brittany, 287; President British Association, 297; with Huxley in the Eifel, 329; presentation to, at Liverpool, 335; on Huxley's intellect, 365; trouble with official chief, 376, 379, 383, 389; account of trip to the Auvergne, 390 *sqq.*; receives Order of the Pole Star, 396; on Belfast meeting of British Association, 401, 413; unable to write obituary of Darwin, ii. 38; P.R.S., 50; vigour of, 163; his treatment by Government, 165; friendship with, 211; Royal Society's Medal, 408; Huxley's love of the garden, 443, 444
Letters from—on his work on microorganisms, i. 331; Dana's obituary of Gray, ii. 193
Letters to—his selection for the Royal Medal, i. 110; E. Forbes, 116; his approaching marriage, 128 (two); submerged forest, 129; British Museum Collections, 133; science in the *Saturday Review*, 139; glacier paper, 144; Swiss trip, 145; election to Imp. Acad. Cæs.: Fullerian Lectures, 149; on criticism, 157; approaching "Augustan Age" of English science, 159; on his *Flora of Tasmania*, 164, 165; on naturalists' fund, 165; on *Times* review of the *Origin*, 177; on the Ape question, 190; on *Punch* squib, 191; his absence: Edinburgh lectures, 194; Huxley's address at Geological Society, 204; working-men's lectures, 1862, 207; *Natural History Review*, 209, 210; future leaders of science, 222; christening, 223; on *Natural History Review* and materialists, 224; illness and death of Henslow, 226, 227; move to Kew: a poor client, 232, 233; science examinations, 237; pressure of work, 245; Science and Art Department examinations, 254; Darwin's Copley Medal, 255; on *x* Club, 260, 261
Medical men and F.R.S., ii. 110; distribution of gentians, 141, 142; Darwin and the *Quarterly* reviewers: chance and atheism, 143; death of Symonds: gentians, 171; the P.R.S. and politics, 174; his Copley Medal, 177, 180; technical education address at Manchester, 181; distribution of Coniferae, 182; visit from H. Spencer, 186; Trustee of the British Museum: story about Lowe: difficulty of the *Origin*, 191; on Dana's obituary of Asa Gray: difficulty of the *Origin*: primer of Darwinismus, 192; *x* Club breaking up, 196; affection of the heart: Moseley's breakdown, 197; Darwin obituary: possible senility, *ib.*; hybridism of gentians, 207; a nomadic life or none: deafness: botanist should study distribution in the Engadine, 207; visit from, before leaving London, 209; Copley Medal: friendship and salt-water experiences, 211; *x* archives: a "household animal of value," 215; Deceased Wife's Sister question, 217; *raison d'être* of clubs, 230; applied science and the Royal Society, *ib.*;

Academy dinner: portrait of Hooker, 233; Monte Generoso: called an old gentleman: anxieties about children when grown up: *x* Club subscription, 237; return from Maloja, 241; orchids and the influence of conditions: Balfour and R. C. University for Ireland, *ib.*; possibility of becoming a pamphleteer, 245; proposed trip to Canaries, 251; Linnean Medal: trip to the Canaries, 256; quietude of mind impossible, theologians keep him occupied, 269; abuse over Salvation Army affair, 274; Carpenter's *First Three Gospels:* varieties of pleurisy: Parnell, 274; Parnell and his followers, 275; sick of controversy: Gladstone and his guides, 276; Mr. Rich's legacy: seeks portrait of John Richardson, 286, 287; visits to Tyndall and Mrs. Darwin, 287; French translation of essays on Darwinism, 291; the Privy Councillorship: only remaining object of ambition, 324; influenza and the *x*, 331; funeral of Hirst, *ib.*; his sense of duty: death of Bowman, 332; *x* Club: his grandchild on grown-up people and trouble, 333; Owen's work: Hume and "being made a saint of," 341; warning against overwork and influenza, 363; at Maloja: boys and their accidents: collects essays: writes chapter in Owen's *Life:* illness of friends, 364 (cp. 373); Tyndall's death: reminiscences, 369; the Antarctic continent: reminiscences of Tyndall: friendly words, 369; chapter on Owen: a piece of antiquity, 373; British Association at Oxford, 1894, 378; Darwin Medal and *Nature* dinner: public speaking: a tenth volume of essays projected: returns to philosophy: Greek and English: cause of giving up dissecting work; character of R. Strachey: Brian and the brine, 390; on *Pithecanthropus*, 394; illness and constitutional toughness: Spencer and "pour le mérite," 401; reassures him against the pessimistic reports of his health, 402

Hooker, Sir William, i. 232

Hornby, Admiral, i. 268

Horner, Leonard, i. 63, 204

Horse, evolution of, i. 327; pedigree of, 390; recent additions to our knowledge of the pedigree of, 469

Howard, Cardinal, ii. 90

Howell, George, M.P., letter to—"a man who did his best to help the people": technical education, i. 476

Howes, Professor G. B., helps in the new science teaching, i. 378, *n.*; extends text-book, 380; on Huxley's drawings at South Kensington, ii. 407; unpublished work, Appendix I.; reminiscences, 411; description of his lectures, 414

Letter to—the scientific docker, ii. 366

Hubrecht, Professor A., impression of Huxley, ii. 423

Hull, lectures at, i. 238

Humboldt, receives a Royal Medal, i. 103

Hume, book on, i. 494-98; his nearest approach to a work of fiction, ii. 7

Hume, on miracles, i. 496; his philosophical diamonds require setting, *ib.*; on impossibilities, ii. 279

Humphry, Dr., Darwin's LL.D., i. 481

Hunterian Lectures, i. 132, 235, 244, 249; lectures the basis of his *Manual of Comparative Anatomy*, 236; resigns, 312

Hutton, R. H., on Vivisection Commission, i. 439; and vivisection, ii. 241

Huxley, Eliza. *See* Scott, Mrs.

Huxley, Ellen, marries Dr. Cooke, i. 6

Huxley, George, of Wyre Hall, i. 2

Huxley, George, sen., at Ealing, i. 1; returns to Coventry, 6

Huxley, Mrs. George, senior (Rachel Withers), mother of T. H. Huxley, i. 1; description of, 3; love for, 4; her death, 83, 99

Letters to—accommodation at sea, i. 28; Rio, 31; Mauritius, 34; description of Miss Heathorn, 38; Port Essington, 43; announcing his return, 64

Huxley, George, jun., in Pyrenees with, i. 85; lives with, for a time, 96; death of, 248

Huxley, Mrs. George, jun., i. 106

Huxley, H., letter to, on his engagement, ii. 252

Huxley, James Edmund, i. 20

Huxley, Jessie O., i. 157. *See also* Waller, Mrs.

Huxley, L., letters to—on winning a scholarship, ii. 8; Fishery appointment, 22; on Mastership of University College, Oxford, 32; assassination of Lord F. Cavendish, 45; pagan and papal Rome, 91; teaching of history: Siena, 97; system at Eton: Lake District Defence Society, 134; hon. committee of French teachers, 163; will not write on politics, 173; Salvation Army: Mr. Sidgwick's rebuke to the *Speaker*, 272; on building a house, 334; on his twenty-first birthday, 433

Huxley, Noel, i. 158, 161; death of, 213, 216, 220
Huxley, Samuel, i. 2
Huxley, Mrs. T. H. (*see also* H. A. Heathorn), his chief critic, i. 301
Letters to—draws the sword, i. 64; his lodgings, 65; help from Burnett, 71; successes, 80; an unequal struggle, 81, 82; resolves to stay in London, 84; British Association at Ipswich, 88 *sq.*; jealousy of his rise, 97; Royal Medal, 101; succeeds Forbes, 108; post at School of Mines, 109; Coast Survey and Edinburgh chair, 113; his future career, 397; Aberdeen address, 407; on British Association, Belfast, 413, 414; Lord Shaftesbury, 428, 430; Edinburgh lectures, 443 *sq.*; second summer in Edinburgh, 458; American trip, 459; Scottish University Commission, 477; spring in Edinburgh, 478; article in the *Echo*, *ib.*; Bright's speeches, *ib.*; greatness of Réaumur: speech on Darwin's LL.D., 480; Prof. Marsh's arrival, 494
Fishery duties, ii. 27 *sq.*, 29; International Medical Congress, 33; proposed resignation, 77; his stay at Ilkley, 129 *sq.*; publication of *Science and Morals*, 146; effect of Ilkley, 147; from Savernake, 164; from the Canaries, 253 *sq.*; ceremony of kissing hands, as P.C., 328; good health in 1893, 362
Huxley, Thomas, grandfather of T. H. Huxley, i. 1
Huxley, T. H., incident at his birth, i. 3; his mother, likeness to, *ib.*; devotion to, 4; his childhood, *ib.*; faculty for drawing, *ib.*, 43, 269, 415; school-days, 5 (*sp.* ii. 145, 264 *sq.*); early studies, 6-8; blood-poisoning, 7; learns German, 8; boyish journal, 9 *sqq.*; at Rotherhithe, 11, 15; impressed by social problems, 15; studies botany, 17; wins a medal, 19; at Charing Cross Hospital, 19, 21-23; his first discovery, 21; interview with Faraday, *ib.*; career determined by Fayrer and Ransom, 23, 251, ii. 133; enters the Navy, i. 23; joins the *Rattlesnake*, 24; his life on the *Rattlesnake*, 26 *sq.*; crossing the line 31; at Madeira, *ib.*; Rio, *ib.*; the first fruits of the voyage, 33; at the Cape, 34; Mauritius, *ib.*; Sydney, 35; engaged to be married, 37; importance of his work on the Medusae, 39, 40; among the Australian aborigines, 42; with Kennedy, *ib.*, 44; writes "Science at Sea," 46; leaves Australia, 52; impression of missionaries in New Zealand, *ib.*; at the Falklands, 53; position in Navy, 54; returns home, 55; scientific recognition of, 64; early friends in London, 65; difficulties, 66, 68, 82-85; elected F.R.S., 66-68; misses the Royal Medal, 69; dealings of the Government with, about his *Rattlesnake* work, 71 *sq.*, 100, 118; list of early papers, 75, 76; stands for various professorships, 77-80, 100; leaves the Navy, 75; writes for the *Westminster Review*, 85; delivers the Fullerian Lectures, 86, 292; succeeds Forbes, *ib.*; describes the scientific world of 1851, 92; jealousy of, 96, 97; his first lecture, 98, 99; receives the Royal Society's Medal, 101, 103, 105 (*see also* 248); morning incapacity, 104; people he can deal with, 106; lives by his pen, 107, 119; obtains a post in the School of Mines, 109; and on the Geological Survey, *ib.*; openness of dealing with his friends, Hooker and Forbes, 110; Carpenter, 111; about a rejected memoir, 112 (*see also* ii. 175, 183, 188); refuses uncertain position at Edinburgh, 114; prefers a scientific career in London, 114, 115, 117, 119, 120, 123, 124; his principle of "having a row at starting," 120; marriage, 128 *sq.*; early work on the Invertebrata interrupted, 132; paleontological work, 132; British Museum Collections, 133; on the value of a hundred a year, 138; tries to organise a scientific review, 139, 209 *sq.* (see *Natural History Review*); his wish to become a physiologist, 140; writes on the Cell Theory and the Skull, *ib.*; ill-health during the fifties, 143; tour in Switzerland, 144 *sq.*; ascends Mont Blanc, 146, 159; work on glaciers, 144, 147; apparent desultoriness of his earlier work, 149; balance-sheet of work in 1857, 148; begins the systematic consultation of foreign writers, 149; recognition abroad, *ib.*; birth of his son Noel, 150; his aim in life, 151; death of his son, 152; position in 1858, 158; ambition, *ib.*; translation and lecturing, 159; money and marriage, 162; paleontology and anatomy, 163; loss of priority through delay of "Oceanic

Hydrozoa," 164; his personal contributions to science, 165; effect on him of the *Origin*, 166 *sqq.*; "anti-progressive confession of faith," 166; one of the decisive critics of the *Origin*, *ib.*; "general agent" to Darwin, 171, 276; nature of his support of Darwin, 171; as Darwin's bulldog, 363; *Descent of Man*, 172, 178; takes up ethnology, 197; his philosophy of life, 219, 412; love of philosophy, 229; early life, 220; moves to Abbey Place, 225; his handwriting, 230, 290, 451; on matrimony, 231, 289, 291; children, 305, ii. 210, 238; "Happy Family," i. 291; fondness for music, 231; health, 234; expedition to Switzerland, *ib.*; Hunterian Lectures, 235, 312; the British Museum, 248 (cp. ii. 191); controversy, i. 251, 482, 488, ii. 273; exhilarating effect of controversy, ii. 115, 116, 122, 145; not inconsistent with friendship, 385, ii. 175 (cp. ii. 17); reputation, i. 250, 251 (cp. 397); ethnological work, 262; vein of laziness, 268; appealed to on point of honour, 268, 269; science course for International College, 269 *sq.*; on Indian anthropological scheme, 273 *sq.*; Edinburgh degree, 275; the writing of elementary books, 283; *Elementary Physiology*, *ib.*; incident at a working-men's lecture, 287; trip to Brittany, *ib.*; anecdote of the cerebellum, 292; on "eating the leek," 296; rapidity of thought, 297; influence of his style, 298; the moralities of criticism, 300, 304; a good book and fools, 300; turning-point in his career, 1870, 322; popular view of, about 1870, 323; effect of *Lay Sermons*, *ib.*; growing pressure of official work, 323 *sq.* (cp. 397, ii. 20); dubbed "Pope" by the *Spectator*, 326; on evolution of the horse, 327; influence of Descartes, and scientific Calvinism, 328 (cp. 113); visits the Eifel, 329; his degree of D.C.L. opposed, 330; President British Association, 331; work on micro-organisms and spontaneous generation, *ib. sq.*; continued work on micro-organisms, 449; on savagery, 334; visits the slums, 335; presentation to, *ib.*; commerce the civiliser, *ib.*; attacks on his Address, 335, 336; stands for the School Board, 337 *sq.*; his programme, 338 *sq.*; opposes proposal to open meetings with prayer, 340; on Education Committee, 341; religious and secular teaching, 342 *sq.*; letters on the compromise and an "incriminated lesson," 344 *sqq.*; report of Education Committee, 347 *sq.*; speech on Ultramontanism, 348 *sq.*; his lasting influence, 350; impression on fellow-workers, 350 *sq.*; examinations, 348; extra subjects, *ib.*; monetary assistance offered, to remain on School Board, 353; sacrifices involved in, 353, 354; urged to stand for Parliament, 353 *sq.*; Secretary of the Royal Society, 356, ii. 112, and Appendix II.; on *Challenger* Committee, i. 356; science teaching for teachers, 357, 362, 376 *sq.*; continues his educational campaign, 357 *sq.*; ideal of a State Church, 359; titles for men of science, *ib.* (cp. ii. 164); edits Science Primers, 360; microscopes, 361, 362; at St. Andrews, 362 *sq.*; holiday work, 363; plays golf, *ib.*; on strong language, *ib.*; breakdown of 1871, 365 *sq.*; help of friends, 366; examines stores at Gibraltar, 367; at Tangier, 368; in Egypt, 369 *sq.*; further treatment, 373; new teaching in biology, 376; view of, 379, 382; changes the course, 380; writes *Elementary Instruction in Biology*, *ib.*; new house in Marlborough Place, 383 *sq.*; lawsuit, 384; loan from Tyndall, 385, 386; mixed classes in Anatomy, 387; Lord Rector of Aberdeen, *ib.*; trip to the Auvergne, 390 *sqq.*; as travelling companion, 391 (cp. ii. 25); geological work, 392; letters on, 393-95; Order of the Pole Star, 396; a paternal gander, *ib.*; his reputation and the part he has to play in the world, 397 (cp. 460, 476); scientific work after 1870, 398; precious half-hours, 397, ii. 20; duty of fulfilling a promise, i. 399, ii. 65; learns to smoke, i. 393, *n.*; attends Presbyterian service, 407, 408; at Belfast British Association, 411 *sqq.*; on "grasping the nettle," 413; feeling about vivisection, 434, 435 *sq.*, 439, 440; grouse-murder, 452; Natural History courses at Edinburgh, 442 *sq.*; suspects himself of cowardice, 458; expectation of his visit in America, 460; a second honeymoon, *ib.*; Position in the world of thought, *ib.*; tugs in New York harbour, 461; prefers the contents of a university to the build-

ings, *ib.*; old opinions and new truth, 462; at Niagara, 464; meets his sister again, 465; an address under difficulties, 466; lectures on Evolution, 467 *sq.*; prophecies fulfilled, 468; the two things he really cares about, 476; posthumous fame, *ib.* (cp. ii. 277, 281); ingrained laziness the bane of his existence, 479 (cp. 268); speech on Darwin's LL.D. at Cambridge, 480 *sq.*, 483; help to a distressed man of science, 482; "bottled life," 484; politics in 1878, 488 *sq.*; projected Introductions to Zoology, Mammalia, Anthropology, and Psychology, 490; engrossed in the Invertebrates, *ib. sq.*; affected by his daughter's illness, 492, ii. 81, 87, 89, 95; rationality and the parental capacity, 180; traces diphtheria, i. 493

Learns Greek, ii. 1; Governor of Eton College, 2; makes drawing part of the curriculum, 3; attends no society except the Royal and Zoological, *ib.*; fifty-three a youthful age, *ib.*; resigns presidency of Association of Liberal Thinkers, 4; LL.D. at Cambridge, *ib.*; becomes a "person of respectability," *ib.*; "eats the leek" over Bathybius, 5; advantages of breaking a leg, 9; faith in Natural Selection, 13; "pretty Fanny's way," 14; optimism and pessimism, 15; friendship and criticism, 17; further involved in official duties, 20; Inspector of Fisheries, *ib.*; salary, *ib.*; duties of inspectorship described, 22-30; conduct of meetings, 26; as a companion, 25 (cp. i. 391); as a writer, 25; as a speaker, *ib.*; life uninfluenced by idea of future recompense, 27; a child's criticism on, *ib.*; refuses to go to Oxford as Linacre Professor, 30, or Master of University College, 31; debt to Carlyle, 34; health in 1881, 35; his title of Dean, 36; his *nunc dimittis* postponed by death of F. Balfour, 37; his notion of a holiday, 42 (cp. 59); queer correspondents, 42 *sq.*; table talk of, in 1882, 45 (cp. 404); presented with the freedom of the Salters, 50; President Royal Society, *ib. sq.*; qualifications for, 51, 52; reluctance to accept, 51-53, or create division in the Society, 54, or to commit it to debateable opinions, 56, 57 (cp. ii. 112); art of governing the headstrong, 54; a record in cab-driving, 58; effect of anxiety on handwriting, 58; holiday defined, 59; composition of a presidential address, 60; confesses himself to Tyndall, 61; the thought of extinction, 62; "faded but fascinating," 63; increasing ill-health, 65; gives up anatomy, *ib.*, 391; looks forward to an "Indian summer," 68, 81; re-reads the *Decline and Fall*, *ib.*; rumoured acceptance of a title, 69; getting into harness as a tonic, 79; ordered abroad, *ib.*; takes up Italian again, 85; papal and pagan Rome, 86, 88, 90, 91; a decayed naturalist, will turn antiquarian, 90; Radicals and arbitrary acts, 92; not roused even by prospect of a fight, 95; moral courage and picture galleries, 100; retires from public life, 104, 107 *sqq.*; illness makes him shirk responsibility, 104 (cp. 428); at Filey, 105; medicinal effect of a book on miracles, 106; science and creeds, 112, 161; intention to revise work on the Mollusca, 122; writes *From the Hut to the Pantheon*, 126; at Ilkley, 129 *sq.*, 132; his career indirectly determined by Dr. Ransom's overworking, 133; visit to Arolla, 136; effect of, 138; second visit to Arolla, 169 *sq.*; begins study of gentians, 136; theological work, a sort of crib-biting, 139; death of a visitor at Arolla, memento of him, 139; his boyhood and education compared with Spencer's, 145; administrative insight, 147; his only sixpence earned by manual labour, 148; attack of pleurisy, 155; Science and Art Department examinership, 156, 157, 214, 235, 236; reply to the Duke of Argyll on pseudo-science, 158, on coral reef theories, 158-60; thinks of retiring to Shanklin, 164; at Savernake, *ib.*; "An Episcopal Trilogy," 158 *sq.*; acknowledgment of error, *ib.*; letter on Murray's theory of coral reefs, 161; his own share in the work of science, 162 (cp. 389); speculation and fact, 163; honorary committee of French teachers, *ib.*; supports free library for Marylebone, 164, 167; on titles of honour, 164; the Irish question, 168; the philosophy of age, "lucky it's no worse," 177, 197, 199; death of his second daughter, 179 *sq.*; paper philosophers, 191; Trustee of British Museum, *ib.*; consolation for age in past service, 198, 199; the stimulus of vanity, 199; depres-

sion, 200; recovery at the Maloja, 201; renewed work on gentians, *ib.*; receives Copley Medal, 202; a centre of society at Maloja, 205; receives a futile "warning," *ib.*; refuges for the incompetent, 212; battles not to be multiplied beyond necessity, 213; a "household animal of value," 215; appearance of, in 1889, 216; works at the limit of his powers, 217; marriage of his youngest daughter, *ib.*; hatred of anonymity, 219; settles at Eastbourne, 220; controversy on Agnosticism, 221 *sq.*; aim in controversy, 225 *sq.*, 235, 271; and in philosophy, 250, 281; on suffering fools gladly, 228, 233, 234; his autobiographical sketch, 231; superiority of the male figure, 232; alcohol, *ib.*; clericalism, 234; second visit to Maloja, 237 *sq.*; returns to Eastbourne, 241; led to write on social questions, 242 *sq.*, 246-50; manner of work, 246, 247; practical results of wrong thinking, 250; marriage and the wisdom of Solomon, 252; trip to Canaries, 251-57; Ulysses and Penelope, 254; receives Linnean Medal, 256; the Flood myth, 260; dislike to moving, 262; reply to Dr. Abbott, 264 *sq.*; quietude of mind impossible, 268; on ethnological questions possesses the impartiality of a mongrel, 270; pertinacity, 272; sends books to Royal College of Science, 277; rational and irrational certainty, 281; his aim, truth in all things, *ib.*; new house completed through Mr. Rich's legacy, 286, 287; visits Huxley Hall, 289; almost indecent to be so well again, 289; his garden, *ib.*; warns younger generation that the battle is only half won, 290; essays translated into French, 290 *sq.*; love for his native tongue, 291; party politics and Unionism, 294; a scholar, not a leader of a sect, 301; backwoodsman's work, *ib.*; a full life suggests more than negative criticism, *ib.*; creation and providence, 302, 303; ethics of evolution, 303; underlying truths of many theological teachings, *ib.*; moral aspiration and the hope of immortality, 304; the world and comfortable doctrines, *ib.*; President of London University Reform Association, 313; administration, 314; appears before London University Commission, 315; heads deputation to Prime Minister, 317; opposes creation of an Established Church scientific, 315; letter on scientific aspirations, 321; on free thought ribaldry, *ib.*; made a Privy Councillor, 322; the title of Right Hon., 327; official recognition on leaving office, 328; visit to Osborne, 328, 329; a friend's second marriage, 330; friendship and funerals, 332; the modern martyrdom, *ib.*; source of his ill-health, 333; faculty of forgetting, 335; on sacramental food, 336; poem on Tennyson's funeral, 339; a religion for men, *ib.*; funerals, 340; his part in the memorial to Owen, 340-42, 364; on bearing attacks, 342; proposed working-men's lectures on the Bible, 345; testimony and the marvellous, 347; Manx mannikins, 347; home pets, 348; payment for work out of the ordinary, 351, 353; on dying by inches, 356; the approach of death, 368; description of his personality in Lankester's review of the *Collected Essays*, 371; letter from a lunatic, 372; a *contretemps* at a public dinner, 373; at Oxford, 1894, 375-79; criticism of Lord Salisbury, 376; repeated in *Nature*, 377, 384, 387; deafness, 381, 429; growing hopefulness in age, 385; receives Darwin Medal, *ib.*; speech, 388 *sq.*; his "last appearance on any stage," 386, 387; characterises his work for science, 389 (cp. 162); late liking for public speaking, 390; slovenly writing in science, *ib.*; life-long love of philosophy, *ib.*; the abysmal griefs of life, 392; brilliancy of talk just before his last illness, 397; meeting with a priest, *ib.*; writes article on *Foundations of Belief*, 398; proof-reading, 400; his last illness, 400-402; passion for veracity, 404 (cp. 45); absence of dogmatism in lectures, 405; children and theology, *ib.*; "Royal lies," 406 *n.*; his great work, securing freedom of speech, 407; carelessness of priority, *ib.*; recognition of predecessors, 408; honesty, *ib.*; loyalty, *ib.*; friends and intimates, 409; practical side of his work, 410; how regarded by working-men, *ib.*; his face described, by Professor Osborn, 412, by Sir W. Besant, 435 *n.*; his lectures described, 412-17; preparation for his lectures, 417; ordinary day's work, 418; method, *ib.*; reading, 418, 419; memory for

facts, not words, 418; delight in literature and art, 419 *sq.*; foreign languages, 420; recreations, 420, 421; table talk of, 424 *sq.*; the happiness of others, 424; simian characteristics of infants, *ib.*; difficulties of disproof and direct evidence, 425; *Common Sense and the Cock Lane Ghost*, *ib.*; transient influence of false assertions, *ib.*; movement of modern philosophy, *ib.*; Plato, 426; geographical teaching, *ib.*; Greeks and Jews, 426, 427; his part in controversy, 427; responsibility, 428; dramatic and literary faculties, *ib.*; French and English artists, *ib.*; human nature described, *ib.*; his manner of conversation, 428, 429; anecdotes from, 429, 430; home life: relations with his children, 431-34; and grandchildren, 434-39; nonsense letters, 439-41; a day's work in later life, 442; love of his garden, 443 *sq.*; the "lodger," 431; sustaining power of a wife's comradeship, 433; field botany, 443
Huxley Hall, i. 2; visit to, ii. 289
Huxley Island, i. 43
Huxley laboratory, ii. 277
Huxley's layer, i. 21

Iddesleigh, Lord, letter to—Civil List pension, ii. 108
Idols, tendency to make, ii. 67
Ilkley, at, ii. 147, 168
Illustrious, H.M.S., ordered to join, i. 74
Immortality, i. 241, ii. 304 (cp. ii. 27, 62)
Immortality and the conservation of energy, ii. 283
Imperial Institute, ii. 151-55
Impromptu speaking, ii. 416
Incapacity, machinery needed to facilitate its descent, i. 257
India, proposed visit to, i. 355; the shortest way home from, 375, 379
Indian Empire, i. 489
Individuality, animal, i. 92, 131; lecture on, 98
Induction, and Babbage's calculating machine, ii. 261 *sq.*
Intellects, English and Italian the finest, i. 341
International College, i. 269 *sq.*; science at, 308
International Medical Congress, ii. 32 *sq.*
Invertebrata, lectures on, i. 295
Ireland, interest in, ii. 44, 45
Irish affairs, ii. 274, 275; Parnell's retirement, 275, 276; the cause of all Irish trouble, 275; reason for being a Unionist, 294
Irving, Sir Henry, visit from, ii. 422
Italian, ii. 420
Italy, visit to, ii. 81-101; moral of, 103

Jamaica Committee, i. 279-83
James, Margaret, grandmother of T. H. Huxley, i. 1
Jamieson, Professor E., i. 108
Jean Paul, *Biography of the Twins*, i. 48
Jebb, Professor, on Erasmus, ii. 396
Jenner, and F.R.S., ii. 110
Jewsbury, Miss, friendship with, i. 409
Jex Blake, Miss, letters to—on medical education for women, i. 387; about her examination, 417
Jodrell, T. J. P., good advice, i. 88; at *x* Club, 258; wishes Huxley to visit India, 355 *n.*
John Inglesant suggests a scientific novel, ii. 43
Johns Hopkins University, inaugural address at, i. 466
Jones, Rymer, i. 94
Jones, Wharton, influence of his teaching, i. 20, 21, 26; comes to his first lecture, 99
Joule, Dr., his work for science, ii. 162
Jowett, B., silence during opposition to D.C.L. for Huxley, i. 330; visit from, ii. 288; power of the priesthood, 378; last illness of, 364
Letter to—science at Oxford, ii. 118;
Judd, Professor, theories of coral reefs, ii. 160

Kalisch, Dr., zoological part of his *Commentary on Leviticus* revised, ii. 297
Karslake, Sir J. B., on Vivisection Commission, i. 439
Kelvin, Lord, on Huxley's work in support of Darwinism, i. 208
Kennedy, E. B., his expedition, i. 42, 44
Kerville, H. G. de, letter to—*Causeries sur le Transformisme*: Lamarck: atheism, ii. 161
Kidd, B., on Social Evolution, ii. 383
King, Clarence, letter to, on Marsh's collections, i. 463
King's College, London, rejected for chair at, i. 79, 107
Kingsley, Charles, first meeting with, i. 121; opinion of Newman, ii. 225
Letters to—on his son Noel's death: his philosophy, i. 217; on species and sterility: anthropomorphism, 239; intellect in man and animals: genius a "sport": Christian dogmas

criticised, 240; matter and spirit, 242; on prayer, 247; Royal Institution lecture: superstitions of men of science: working-men's lectures: original sin and Darwinism: whales, 276; on Jamaica affair, 281; on Comte, 300
Kingsley, Miss, letters from Charles Kingsley, i. 448
Kitton, J. G., letter to—home pets, ii. 348
Klein, Dr., i. 258
Kleinenberg, Dr., on Hydra, i. 400
Knowles, James, a founder of Metaphysical Society, i. 314
Letters to—toning down a controversial article, ii. 116; reply to condolence on his daughter's death: a loyal friend, 181; article on the "Struggle for Existence": how to kill humbug, 187; reply to Krapotkin, 199; refuses to write a public reply, *ib.*; article on "Natural Inequality of Men," 243, 245; a telegram and a telegraph boy, 244; article on "Agnosticism," 221; accused of calling Christianity sorry stuff: help to the New Reformation, 222; Christ and Christianity: Cloister scheme, 223; printers' errors, 224; aim in controversy: named as a temperate blasphemer: demonology: development, 225; reviling morally superior to not reviling, 226; explanation with Bishop Magee ends controversy, 227; the last word: miracle of Cana: Newman, 227; supposed payment for *Nineteenth Century* articles, 367; suggestion of article on *Foundations of Belief*: difference from Spencer's views, 398; the first instalment of the article, *ib.*; the "art d'être grandpère," 399; divides the article, *ib.*; work against time on proofs, *ib.*; rest of article postponed through influenza, 400; on friendship, 408
Kölliker, Professor R. A., corresponds with, i. 150; translation of his *Histology*, 159; 164, 245; reviewed, 249; criticism of, 304
Kowalesky, his discoveries dependent on those of Huxley, i. 40; on Ascidians, 333
Krohn, anticipates his work on Salpa, i. 92

Lacaze du Thiers, Dr., corresponds with, i. 150; on his handwriting, 230
Ladder, from the gutter to the University, ii. 154
Laing, S., on Agnosticism, ii. 221 *sq.*
Laishly, R., cites Huxley on secular teaching, i. 343 *n.*
Lake District Defence Society, ii. 135
Lamarck, early study of, i. 168; Darwin's theory not a modification of his, 200, but an advance on, 227; appreciation of, ii. 39, 408; not forgotten in England, 151
Lamlash Bay, naturalists' station at, i. 155
Lang, Andrew, *Common Sense and the Cock Lane Ghost*, ii. 425
Language, Italian, ii. 85
Lankester, Dr., Sec. Ray Society, i. 89
Lankester, Professor E. Ray, on Huxley's "Review of the Cell Theory," i. 140; with him at Naples, 372; illness of, 374; on Rolleston's science teaching, 377 *n.*, 380; helps in the new science teaching, 378; describes lectures, *ib.*; at Dohrn's station, 418; review of Huxley's *Collected Essays*, ii. 371; impression of him, 423
Letters to—Lymnæus as periwinkles, i. 408; battles, like hypotheses, not to be multiplied beyond necessity, ii. 213; immature fish, 234; Pasteur's treatment for rabies, 239; report of Pasteur meeting, 240; science school at Oxford: trouble over Booth affair, 282; ideal of a modern university, 309
Latham, Dr. R. G., stands for Registrarship at London University, i. 111; on the existence of the Established Church, ii. 383
Lathrop, Mr. and Mrs., meeting with, i. 464
Latin and culture, ii. 13
Latin fetish, i. 406, ii. 190
Latin in Board schools, i. 348
Latin verses, i. 277
Laugel, A. A., at *x* Club, i. 258; meeting with, 306
Law, i. 242; abuse of the word, ii. 146
Lawrence, Lord, President of School Board, i. 339; on Huxley's retirement, 349; leaves School Board, 372
Lawrence, Sir William, his book *On Man*, i. 178; acknowledgment of *Elementary Physiology*, 283
Lay Sermons, published, i. 323; popularity of, 328
Lecky, W. E. H., letters to—on Hume: needless assertions and blunders, i. 498; treatment of Irish history, ii. 44; books from: Irish leaders, 274

Lectures, at Birmingham, i. 337, 357
at Bradford, i. 337
on a Piece of Chalk, i. 297
Croonian, i. 141
on Cuttlefish, ii. 13
at Edinburgh, i. 192-96
Fullerian, i. 138, 148
on the Hand, i. 456, 497
Hunterian, *q.v.*
Introductory, to the course at the School of Mines, i. 137
on Invertebrate Anatomy, in *Medical Times*, i. 162
at Leicester, i. 337
London Institution, i. 171, 309, 356, 469, 473, ii. 1
Persistent Types, i. 171
Relation of Man to the Lower Animals, i. 179
Royal Institution, i. 171, 191, 198, 356, 442, 456, 457, 473, ii. 1, 48
at School of Mines, i. 148
to working-men, i. 138, 148, 179, 190, 206 *sq.*, 249, 337, 356, 400, 456
at Zoological Gardens, ii. 1, 13
Lecturing, warnings about his early style, i. 89
Leighton, Sir F., and literary honours, ii. 165
Leuckart, Professor, letter to—morphological work, i. 162
Lewald, Fanny, autobiography of, i. 304
Liberal education, i. 298
Liberal Thinkers, Association of, ii. 3
Lichfield, native place of Thomas Huxley, i. 1
Liddon, Canon, abuse of the word "law," ii. 146; sermon on "law" leads to article on pseudo-scientific realism, 157; sermon in reply to "Lux Mundi" occasion of "The Lights of the Church and the Light of Science," 260
Life, compared to a whirlpool, ii. 67
Lilly, W. S., replies to, ii. 144
Linnean Medal awarded to Huxley, ii. 256
Linnean Society, elected to, i. 150
Literary Gazette, notice of Huxley in, i. 91
Littlehampton, i. 302
Littre, *Life of Comte*, i. 301
Liverpool, address before the Philomathic Society, i. 307; address before Liverpool Institute, ii. 40
President British Association at, i. 331; visit to slums, 335; moral influence of commerce; *ib.*
Lockyer, Sir Norman, Science Editor of the *Reader*, i. 211
Logical consequences defined, i. 412
London Hospital, address at, ii. 65
London Institution, lectures at, on physiography, i. 309, 473
London University, examiner at, i. 148, 154, 238; science examinations at, 237; on Senate of, ii. 59
London University Reform, ii. 307-17
Louisiade Archipelago, i. 51
Lourdes, miracle of, i. 391
Lowe, Robert (Lord Sherbrooke), thinks Huxley should be at the head of the Natural History Collections, i. 247; wishes him to be Trustee of the British Museum, ii. 26, 192
Lubbock, Sir John (Lord Avebury), i. 163, 209; at Oxford, 1860, 182, 187; joins *x* Club, 257; with Huxley in Brittany, 287; presentation to, at Liverpool, 335
Lucas, Mr., and the *Times* review of the *Origin*, i. 176
Lucretius, i. 227
"Lux Mundi," controversy raised by, ii. 260
Lyell, Sir Charles, i. 63, 240; article on, by Owen, 94; reads the *Origin* before publication, 166; influence of the *Principles of Geology*, 168, ii. 162; supports Darwin, i. 172; leads Huxley to take up ethnology, i. 197; on editing the *Natural History Review*, 210; opinion of Huxley, 202; description of his address at the Geological Society, 205
Letters from—on popular lectures, i. 208; to Sir C. Bunbury, species question, 169
Letters to—on species, i. 173; on skull measuring, 197; on *Man's Place*, 199; reply to criticisms as to the simian brain: Darwin shows a *vera causa* for evolution, 200; simian brain, 201; on women's education, 211; on Labyrinthodonts, 263; work on fossils, especially from Spitzbergen, 285
Lynton, holiday at, ii. 42

Macclesfield, Samuel Huxley mayor of, in 1746, i. 2
Macgillivray, John, i. 32, 39, 42
Macleay, Sir William, i. 36, 38, 39; letter to, on English scientific world, 91
M'Clure, Rev. E., letter to—motive to get at the truth in all things: immortality and the conservation of energy: thought as a "function" of the brain: origin of sin, ii. 281
MacWilliam, Dr., F.R.S., i. 46
Magee, Bishop, controversy with, ii. 222 *sq.*, 225, 226; end of, 227

Malins, Vice-Chancellor, remarks on the suit brought against Huxley, i. 384
Mallock, W. H., on Bathybius, ii. 160
Maloja, first visit to, ii. 201, 205; second visit to, 237 *sq.*; third visit to, 363; memorial at, 364
Manning, Cardinal, in Metaphysical Society, i. 314
Man's Place in Nature, i. 192, 198, 199; criticisms and success of, 201, 202, 204; a friend begs him not to publish, ii. 344; ridiculed, 425
Mansel, Rev. H. L., i. 218, 242
Mantell, G. A., i. 93
Manual of Comparative Anatomy, i. 85, 148
Manual of Invertebrate Anatomy, i. 390, 457
Manual of Vertebrate Anatomy, i. 357
Marine Biological Association, ii. 128
Mariner, on Tonga, ii. 124
Marsh, Professor O. C., at *x* Club, i. 258; visit to, 461 *sqq.*; on Huxley's impartiality, 462; supplies anecdote on advantage of breaking a leg, ii. 9
Letter from—on Huxley's welcome to him in England, i. 494
Letters to—pedigree of the horse, i. 463; later discoveries, 468; his inexhaustible boxes, 469; arrival in England, 493
Marshall, Mr., of Buffalo, visit to, i. 464
Martin, H. N., helps in the new science teaching, i. 378, 379; helps write *Elementary Instruction in Biology*, 380; American edition of the *Practical Biology*, ii. 1
Martineau, James, in Metaphysical Society, i. 314
Mary, Queen of Scots, ii. 47
Maskelyne, Neville Story, i. 139
Mason College, opening of, ii. 13
Masson, David, i. 247; at *x* Club, 258
Materialism, i. 224, 242 *sq.*; accusation of, 299; a sort of shorthand idealism, 328
Maurice, F. D., first meeting with, i. 121; and the Working Men's College, 138; his philosophy, 221, 244; in Metaphysical Society, 314
Maxwell, Colonel, i. 234
May, George Anderson, i. 6, 10
May, Mrs., letter to—ill-health in youth, ii. 35
Mayer, Dr., assistant to Dr. Dohrn, ii. 84
Mayer, J. R., on conservation of energy, ii. 162
Mayne, Captain, of the *Nassau*, i. 312
Medical education, ii. 190, 310, 405; correspondence in *Times*, 263; letter on preliminary liberal training, *ib.*; degrees, 314
Men of science, the risks to be faced by, i. 203
Mercers' Company and technical education, ii. 50
Metaphysical Society, foundation of, i. 313; Mill's criticism of, 315; mutual toleration, 316, 317; Huxley writes three papers for, 318, 319; the name "agnostic," 319 *sq.*; his part in it, 317; described by Professor H. Sidgwick, 320
Mikluko-Maclay, on fish-brains, i. 333
Milford, at, ii. 58, 69 *sq.*
Mill, J. S., and International College, i. 269; opinions condemned by Ward, 323; burial of, ii. 18
Miller, Canon, on Huxley's retirement from the School Board, i. 349, 371
Milman, Canon, invites Huxley to opening of new buildings at Sion College, ii. 147
Miracles, paper on, i. 457 (cp. 319); agrees with orthodox arguments against Hume, 496; swine, ii. 71; miracles not denied as impossible, 279 *sq.*
Mivart, Professor St. G., his statements about Suarez criticised, i. 364; reminiscences, ii. 406 *n.*, 410; description of Huxley's lectures, 413
Letter to—Darwin's character and friends: Galileo and the Pope, ii. 113
Moir, Dr. John, i. 407
Moleschott, i. 163
Mollusca, on the Morphology of the Cephalous, i. 76; aim of this paper, 92, 97
Moral sense, ii. 305 *sq.*
Morality and nature, ii. 268, 382
Morison, Cotter, on anonymous review of Gosse, ii. 144
Morley, Right Hon. John, at *x* Club, i. 258; in Metaphysical Society, 315
Letter from—on his *Physiography*, i. 477
Letters to—proposed book on Hume: article for the *Fortnightly*, i. 423; a "consistent bigamist" in writing for the magazines, 424; possible cowardice in not publishing paper on miracles, 458; on *Physiography*, 477; article for the *Fortnightly*: "Dr. Dizzy" on sea air: Darwin's LL.D., 483; invites him for New Year's day, *ib.*; Harvey article: controversy: foreign politics and the British lion, 488; Hume: portrait: Tulloch's *Pascal*: Clifford's character, 495; thanks for *Diderot*:

want of a portrait: sketch of the *Hume:* Hume not half a sceptic, 496; the "setting of Hume's diamonds": cannot judge his work in MS., *ib.*; working on the Life, 497; Morley's criticism: division of the book, *ib.*; a critical symposium, proposed English Men of Science Series, 498; on Spottiswoode, ii. 50; a Newcastle society: the thought of extinction, 62; proposed book on Berkeley, 80
Morley, Samuel, on School Board, i. 342
Motto of the family, "Tenax propositi," i. 119, 131
Moulton, F., to help in Men of Science Series, i. 499
"Mr. Darwin's Critics," i. 363 *sq.*
Müller, Johannes, on Holothuriae, i. 95; his method, 103, 162; appreciation of, ii. 39
Mundella, Right Hon. A. J., and technical education, ii. 155
Letter to—retiring pension, ii. 107
Murchison, Sir Roderick Impey, i. 63; and experimental station, 155, 156; and the Schlagintweits, 228; and geological amateur, 275; on the "Physical Basis of Life," 299
Letter from—on election to Athenæum, i. 150
Murray, John, on quarterlies, i. 211
Murray, Sir J., theory of coral reefs, ii. 158
Museum of Practical Geology, post at, i. 87; catalogue for, 148
Museum, paleontological, ideal of, ii. 131
Museums, i. 132 *sq.*; British, 133; Manchester, 135; Chester, 136; Warwick, *ib.*

Napier, Sir Charles, described, i. 102
Napoleon III., at the British Association, i. 382
Nares, Sir G., Polar expedition, i. 447
Nashville visited, i. 465
Nassau, H.M.S., exploring ship, i. 276, 312
National Association of Science Teachers, resigns presidency, ii. 65, 66
Natura non facit saltum not true in evolution, i. 173, 176
Natural History Review, i. 209 *sq.*, 224, 249
Natural Selection, not weak of faith in, ii. 13; unlucky substitution of "survival of the fittest" for, 268; produces state socialism, *ib.*
Naturalists' fund, i. 165
Nature, translates Goethe's *Aphorisms* for the first number, i. 326; article "Past and Present," on twenty-fifth anniversary, ii. 377, 387; after-dinner speech, 386, 390
Nautilus, i. 148
Naval officers and scientific research, ii. 42
Neanderthal skull, i. 197, 273
Necessity, i. 242
Nettleship, R. L., at Arolla, ii. 169
Newcastle, joins a society at, ii. 62
Newman, J. H., applied to for testimonial, i. 19; his doctrine of development, ii. 225; Kingsley's opinion of, *ib.*; cited by Huxley, 226; effect on, of Papistry, 227; how to turn his attacks, 280
Newport, George, i. 70, 92; as man of science, 94
Newton, E. T., paleontologist to the Geological Survey, ii. 212
Newton, Sir Isaac, compared with Ptolemy, i. 200; a "sport," 240; and his title, 259
Niagara, i. 464
Nicholas, Dr., master of Ealing School, i. 1
Nicholson, Dr., of Sydney, i. 95
Nietzsche, means to read, ii. 360
Nordenskiold, fossils from Spitzbergen, i. 285
Northumberland, Duke of (First Lord of the Admiralty), i. 72, 100
Norwich, Fishery Exhibition at, ii. 27 *sq.*

Oakley, Sir Herbert, vicar of Ealing, i. 4
Objects of the sea-shore, letters on, ii. 292, 293
Oceanic Hydrozoa, i. 75, 76, 132, 148, 160; loses priority by delay, 164; still of use in 1867, 289
Officers, retired, in administrative posts, ii. 46
Official work, growth of, i. 397; climax of, ii. 48
Oken, his speculations, i. 103, 141
Oliver, Professor, i. 210, 254
Opinions which cannot be held "without grave personal sin," i. 323
Optimism, i. 219
Origin of Species, i. 159; effect of its publication, 166; "a flash of light," 170; review in *Times*, 176; criticism on the, 253; influence of, 322; "coming of age" of, ii. 11 *sq.*; difficulty of, 192, 193; and theory of evolution, 378
Original sin and Darwinism, i. 276 (cp. ii. 281)
Orthodox Christianity, how regarded by many men of science, i. 221, 239 *sq.*
Osborn, Professor Henry Fairfield, reminiscences quoted, i. 293; account

of Huxley at Oxford, 1894, ii. 376; description of his lectures, 412; impromptu lecturing, 416; simian characteristics of infants, story of Huxley, 424 *n.*
Ossory, Mr., with Huxley in Egypt, i. 371
Owen, Sir Richard, introduction to, i. 25, 27; visits, 58; supports claims of Huxley, 59, 60, 62, 80; at the Geological Club, 63; his pay, 68; as man of science, 93; his *Parthenogenesis*, 94; civility of, 95; support for F.R.S., 96; breach with, 141; at Aberdeen British Association, 155, 157; his morphological speculations, 160; the British Cuvier, 161, 163; style of, 177; on the Ape question at Oxford, 180, 186, 191, 192, 200; at Cambridge British Association, 198; on air-cells of birds in flight, 212; criticises Darwin on spontaneous generation, 244; 248; author of article on "Oken and the *Archetype*," 250; his books to be asked for by Dohrn, 376; attack on Hooker, 389; Mrs. Carlyle's saying about, ii. 167; death of, 339; statue to, 340; review of his work: a piece of antiquity, 373; review of, in *Nature*, 374
Owens College, governor of, i. 390; opening of, 402
Oxford, compared with London, i. 154; Huxley refuses Linacre Professorship, 158; invited to accept Linacre Professorship a second time, ii. 30; invited to be master of University College, 31; receives D.C.L., 105, 110; science at, 118, 119, 282; letter on chair of English Literature, 284; addresses at, a contrast, 356
Oysters, on, ii. 48

Paget, Sir James, address from, at Medical Congress, ii. 33; supports London University Reform, 314
Paleontology, work at, i. 132; "The Method of Paleontology," *ib.*; rise and progress of, ii. 34; would have led to invention of evolutionary hypothesis, *ib.*
Paley, *Evidences*, and argument from design, ii. 57
Pangenesis, i. 268
Pantheon, admiration of, ii. 126
Parker, T. Jeffery, on Huxley and the practical teaching of biology, i. 377 *sq.*; teaching by types, 379; persuades him to change course of teaching, 380, and to alter biological course, ii. 411; *Encyclopædia* work between H and L, i. 454; impression of Huxley, ii. 423; as administrator, 411; as lecturer, 412; with his children, 434
Letter to—book dedicated to him: renewed vigour: "cultivons notre jardin" the whole duty of man, ii. 289
Parker, W. K., and the F.R.S., i. 270
Letters to—i. 244; bids him remodel his work on the Struthious skull, 271; bird classification, 286; the style of his Frog paper, 415; work on the Amphibia, 416 *sq.*; interest in the Invertebrata, 491
Parnell, C. S., his great qualities, ii. 126; retirement, 275
Parslow, Darwin's old butler, ii. 287
Pasteur, L., Huxley repeats his experiments on micro-organisms, i. 331; Pasteur and pebrine, ii. 268; typical of the century? 374
Pasteur Institute, letter to the Lord Mayor on, ii. 239
Paton, Miss, of St. Andrews, i. 362
Pattison, Mark, in Metaphysical Society, i. 314
Payne, J., on science in public schools, i. 277
Payne, Dr., i. 501
Pearson, Professor K., on Huxley's work in London University Reform, ii. 313
Peile, Dr., at Arolla, ii. 169
Pelseneer, Professor, letters to—intention to revise work on Mollusca, ii. 121; Molluscan morphology, 259; completion of *Spirula* memoir, 361; early morphological ideas confirmed: publication, 362
Pelvis in Mammalia, ii. 1
Penmaenmawr, writes *Hume* at, i. 495
Percy, Dr. John, at School of Mines, i. 111-14
Pflüger, a physiological experiment, i. 437
"Physical Basis of Life, On the," i. 299; "the boldest act of his life," *ib.*
Physiography, lectures, inception of, i. 277; lessons in, 308 *sqq.*
Physiography, published, i. 476; adapted in Germany, *ib.*; a boy's appreciation of, 477
Physiology, study of, compared to the Atlantic, i. 407; "Elementary Instruction in," 473
Plants, sexes of, and Shakespeare, ii. 218
Plato, opinion of his philosophy, ii. 426
Playfair, Lyon (Lord Playfair), at School

of Mines, i. 114; on Fishery Commission, 234; Vivisection Bill, i. 436, 438
Political Economy, method of, ii. 384
Pollock, H., at Lynton, ii. 42
Pollock, Dr. Julius, i. 501; at Lynton, ii. 42
Pollock, W. F., on Committee of the *Reader*, i. 211; and Tyndall's absence, 390
Port Essington, i. 43, 45
Positivism, the scientific aspects of, i. 299-301; ii. 300 *sqq.*
Possibilities and impossibilities, *ii. 279 sq.*
Posthumous fame, i. 476
Poulton, Professor, letter to—Genesis and inspiration: Canon Driver's criticisms, ii. 117
"Pour le mérite," i. 396
Powell, Rev. Montague, on Huxley and the scientific docker, 367
Practical Biology, adapted for America, ii. 1
Practical life as a rule-of-three sum, i. 406
Prestwich, Sir Joseph, his *Geology* and the Genesis controversy, ii. 117
Letters to—on presidency of Geological Society, i. 311; the Privy Councillorship: temporal and other deserts, ii. 326
Price, Professor Bartholomew, letter to—D.C.L., ii. 110; gaps among friends, 119
Priesthood, power of, ii. 379
Priestley, address on, i. 408, 410
Primer, Introductory, i. 390, 490, ii. 2
Primrose, H., dines with, ii. 29
Pritchard, Professor, and Metaphysical Society, i. 314
Promotion by seniority, ii. 295
Protest, a theological, i. 470 *sq.*
Providence, ii. 302, 303
Psychology, projected introduction to, i. 490, ii. 1
Ptolemy compared with Newton, i. 200
Punch, squib on the Ape question, i. 1, 191, 200; cartoon of Huxley, ii. 26 *n.*
Pupil teachers, ii. 156
Puritanism, in action and belief, i. 329
Pusey, opposes D.C.L. for Froude and Huxley, i. 330
Pye Smith, Dr., i. 239
Pyrosoma, i. 58; further observations on, i. 211

Quain, Dr. Richard, President Royal College of Surgeons, i. 312
Quakerism, rise of, compared to rise of Christianity, ii. 267
Quarterly Review, attack on Darwin, i 425 *sq.*
Quekett, J. T., unfairly treated, i. 94

Radiata, a zoological lumber-room, i. 58, 131
Ramsay, Sir A. C., i. 139, 382
Rankine, Professor, presentation to, at Liverpool, i. 335
Ransom, Dr., indirectly determined his career, ii. 133
Rathbone, P. H., presides at the Sphinx Club dinner to Huxley, i. 335
Rathbone, W., wishes to send Huxley on a visit to India, i. 355
Rathke, i. 141
Rattlesnake, H.M.S., enters, i. 24; quarters on, 26, 28; life on, 28, *sq.*; voyage of, 31 *sq.*, 41 *sq.*; effect on Huxley's development, 56; Voyage of the, reviewed by Huxley, i. 46 *sq.*
Ravenna, ii. 85
Ray Society, helps publish Huxley's early papers, i. 75, 90; translation of Haeckel's *Morphologie*, 305
Read, Charles, on Huxley's retirement from the School Board, i. 349
Reader, the, i. 211
Réaumur, on the six-fingered Maltese, i. 173; appreciation of, ii. 408, 480
Reconcilers, i. 239
Red Lion Club, i. 87, 91
Rede Lecture, on the Pearly Nautilus and Evolution, ii. 57, 59
Reeks, Trenham, i. 156; on the temperature of a letter from Tyndall, 401
Reformation, the New, i. 397
"Rehmes," ii. 115, 296
Reid, Sir John Watt, at Haslar, i. 24; advice, 56
Religion and morality, defined, i. 343 *n.*
Religion for men, ii. 339
Renan, typical of the century? ii. 374
Rendu, on glaciers, i. 409
Reptilia, fossil, memoirs on, i. 153
Responsibility, illness and, ii. 104 (cp. 428)
Retirement, ii. 104, 107; at the age of sixty, 109; pension, 107 *sq.*; remains Honorary Dean of College of Science, 108; Civil List pension, 108
Réville, Dr., attacked by Gladstone, ii. 114, 115
Ribaldry, heterodox, worse than orthodox fanaticism, ii. 322, 406
Rich, Anthony, legacy from, ii. 286
Richardson, Sir John, selects Huxley for scientific expedition, i. 24, 25, 27; letter to—on work done during voy-

age, 58; meets again, 71; 94; seeks portrait of, ii. 287
Rigg, Dr., on Huxley's retirement from School Board, i. 349
Riley, Athelstan, attack on the compromise, ii. 383
Ripon, Bishop of, letter to—work and influence of men of science, ii. 162
Riviere, Briton, R.A., letter to—science training for his son, ii. 318
Roberts, Father, on Galileo and the Pope, ii. 113
Robinson, Dr. Louis, simian characteristics in infants, ii. 424
Rogers, Rev. William, at Sion House meeting, i. 302; letter to — on physiography lectures, 309
Roller, Mrs., letters to—Roman architecture: Catacombs, ii. 88; endless sights of Rome, 98; Florence, 100; French women and French dishes: superiority of the male figure, 232; money and a new house, 276; birthday letters: good looks as a child, 288; love of children: the "just man who needed no repentance" as a father, 330; "the epistle of Thomas," 440
Rolleston, Professor G., visit to, i. 154; work on the simian brain, 190, 191; characterised, 209; teaches biology by types, 377 *n.*, 380; death of, ii. 30; asked to succeed, *ib.*
Letter to—his recovery, i. 403
Roman Catholics and physical science, i. 307
Romanes, Professor G. J., evolution of intellect from sense, ii. 113; interpretations of Darwin, 192; fatal illness of, ii. 364
Letters to — on his refusal to join Association of Liberal Thinkers, ii. 3; his obituary of Darwin for *Nature*, 38, 39; alleged presupposition of design in evolution: liars and authors should have long memories, 188; experimental evolution, 292; illness of: type of the empire and Home Rule, 333; adumbration of the Romanes Lecture: Madeira, 334; his poems: a wife-comrade: a religion for men: Tennyson poem, 339; the Romanes Lecture: a doubtful promise, 350; ready to act as substitute for Gladstone: subject, *ib.*; Gresham University scheme: payment for lecture, *ib.*; limits of the subject, 353; proofs seen by Romanes, 354; dangers of, *ib.*; illness of friends: the approach of death, 368
Romanes, Mrs., a "chirrupping" acceptance of an invitation, ii. 351
Letter to—publication of the "chirrupping" letter: refrains from "touching a wound he cannot heal," ii. 380; guards against possible misrepresentations in the letter, 381
Romanes Lecture, theme of, anticipated in the "Struggle for Existence," ii. 187, 303, 334; special inducement, 349; letters on, 350 *sq.*, 354-57; criticisms on, 352, 358-60; description of, 356 *sq.*
Rome, ii. 86-96
Roscoe, Sir Henry, letters to—on Science Primers, i. 360; advice to stay at Owens College, 381; British Association 1872: health: Primers, 382; appointments at Owens College, 390; tour in Auvergne, 393; opening of Owens College, 402; on Men of Science Series, 499, 500; second sketch of Introductory Science Primer, ii. 27; on his knighthood, 66; attack of pleurisy, 155; technical education, 155; sectarian training colleges, 156
Rosebery, Lord, letters to—a deputation on London University reform, ii. 317; a *contretemps* at a public dinner, ii. 373
Ross, Sir James, meeting with, i. 89
Rosse, Lord, P.R.S., i. 73; his help, 103, 107
Rousseau, ii. 248
Royal College of Science, to be kept clear of new University scheme, ii. 311 *sq.*
Royal Society, and Huxley's early papers, i. 56, 60, 62, 66, 71, 75; elected Fellow, 67, 96; nearly receives Royal Medal, 69; elected on Council, 80; Medal, 101, 103, 105; his work as Secretary, 324; duties of Secretary, ii. 87, 90; resignation of Presidency, 71, 73, 75-77, 107; admission of medical men, 110 *sq.*; evening meetings and smoking, 111; politics and the Presidency, 173-76; federation scheme, 189; dealings with Huxley, 212; alleged ignoring of distinguished men, 342; Fee Reduction Fund, 343
Rücker, Professor, and new University scheme, ii. 312
Ruskin, breach of confidence touching a letter of his, ii. 131
Rutherford, Professor, helps in the new science teaching, i. 378

Sabine, Colonel, i. 80, 90, 104; and the Schlagintweits, 228; and Darwin's Copley Medal, 255

Sacramental food, ii. 336
St. Andrews, Lord Rectorship, i. 372, 481
St. Andrews, sends his son to, i. 479
St. Thomas' Hospital, lectures at, i. 109
Salisbury, Lord, interview with, on literary and scientific honours, ii. 164; seconds vote of thanks to, as President of the British Association, 376; criticism in *Nature*, 377, 384
Salmon disease, ii. 24, 29; Memoir on, 39, 40
Salmon, their "playground," ii. 29
Salpa, i. 57, 75; aim of his work on, 92; anticipated in, *ib.*
Salters' Company, present Huxley with their freedom, ii. 50
Salvation Army controversy, origin, ii. 271; progress of, 272, 273
Samuelson, Mr., letter to, on clerical attacks, i. 336
Sanderson, Sir Burdon, Vivisection Bill, i. 437, 438; discussion with Tyndall, 482; dines with, ii. 33
Sandon, Lord, leaves School Board, i. 371
Sandys, J. E., his speech presenting Huxley for LL.D. at Cambridge, ii. 4; letter to—"tenax propositi," 5
Satan, the prince of this world, ii. 303, 357, 359, 383
Saturday Review, science in, i. 139
Sauropsida, i. 294
Savages, interviews with, i. 51
Savigny, his observations on Salpa supplemented, i. 57; his morphological method adopted, 92
Schlagintweit, the brothers, i. 228
Schmitz, Dr. L., head of International College, i. 269
Schomburgk, Sir Richard, i. 237
School Board, work on, i. 337-53; his campaign continued in "Administrative Nihilism," i. 357; compromise, letters on, ii. 346; Diggleite attack on the compromise, 383
Schurman, Professor, on design in evolution, ii. 188
Science and Agriculture, ii. 283
Science and Art Department, lectures for, i. 109; value of examinations, 254; examinations, ii. 59
"Science and Art in Relation to Education," ii. 40
Science and creeds, ii. 161; and its prophets, 374
"Science and Culture," ii. 13
"Science and Religion, Truthfulness in," ii. 212
"Science at Sea," i. 46 *sq.*
Science, in public schools, 277; in elementary schools, 341, 337, 347; the great tragedy of, 332; definition of, ii. 13; at Oxford, 118, 119
Science, Biological, and Medicine,
Science Primers begun, i. 360
Science teachers, need of, i. 277
Science teaching: scheme for the Int national College, i. 308
"Scientific Education," i. 307
Scientific missionaries, i. 377
Scott, D. H., extends text-book on E logy, i. 380
Scott, John Godwin, i. 17
Scott, Mrs. J. G. (Eliza Huxley), v to, i. 465
Letters to—prospects of *Rattlesn* voyage, i. 25, 26; first scient memoir, 33; engagement, 37; I cruise and Kennedy's expediti 44; return and ambitions, 6 character of Forbes, 95; death his mother: first lecture: irony his position, 99; Royal Med people he can deal with, 10 Science and Mammon, 106; rour the Cape Horn of his life, 117; pc tion in 1858, 157; his home in 18 161; his reputation: slavery, 251
Sea serpent, letters on, ii. 346, 347
Selborne, Lord, in Metaphysical Socie i. 314
Sensation, lecture on, ii. 1
Seth, Professor, letters to—thanks f understanding him: conditions Romanes Lecture: Faraday popular audiences, ii. 358; Pr legomena: Spinoza, 360
Sexton, T., and Parnell, ii. 275
Shaftesbury, Lord, quotes Huxley's d finition of religion and morality, 343 *n.*; charges him with advoc ing vivisections before children 4 *sq.*; letter from, 429
Sharpey, Dr. William, help from: Se tary Royal Society till 1871, i. 62; Vivisection Bill, i. 438
"Shehretz," ii. 115, 296
Sidgwick, Wm. C., rebuke to *Speaker*, ii. 272
Sin, origin of, ii. 282 (cp. i. 276)
Sinclair, Sir J. G. T., letter to, on P bage's calculating machine, ii. 2
Sion College, declines to attend oper of new buildings at, ii. 147
Sion House meeting, i. 302 *n.*, 313
Skelton, Sir John, visits, i. 459, 478
Letters to—*Noctes Ambrosianae*, 459; advantage of quasi-Scot nationality: the Hermitage t pleasant for work, 478; biograp and fiction: conscience and lett writing, ii. 7; dinner and discu sion, *ib.*; *The Crookit Meg*, a refe ence to Huxley, 16; introductic to Tyndall, 36; Mary Stuart an

the Casket Letters, 47; Gladstone as controversialist, 122; nature and suffering, 134; historians and practical discipline: an antagonist "rouses his corruption," 184; retirement from London, 285; the Casket Letters, 209; limitations of the Romanes Lecture, 359; mending the irremediable, 360
Skull, theory of the Vertebrate, i. 141; further investigations, 154, 227
Slavery, i. 252
Smalley, G. W., Huxley in New York harbour, i. 461; description of him as a lecturer, ii. 416; his friends and talk, 422
Smith, Robertson, at ✕ Club, i. 258
Smith, Sir William, i. 248; and International College, 269; effect of the name "vivisection," 427
Smith, Right Hon. W. H., Bible-reading in schools, i. 342
Smyth, W. Warington, i. 139; death of, ii. 260
Snakes, lecture on, ii. 1
Socialism, State, and natural selection, ii. 268
Societies and ladies, i. 212
Society and societies, i. 324
Society for the propagation of common honesty, i. 199
Society of Arts, speech at, i. 475
Speaker, the, insinuations of, rebuked, ii. 272
Species and sterility, i. 239
Spectator, on "Pope Huxley," i. 326
Spedding, James, influence of Huxley's accuracy in style, i. 298; letter from—on Bacon, 487; Bacon's influence compared with Huxley's, *ib.*
Spencer, Herbert, and evolution, i. 168; joins *x* Club, 257, 260; criticises "Administrative Nihilism," 268; on Comte, 301; "devil's advocate" to, 333, ii. 68; his comparison of the body politic to the body physical criticised, i. 358; controversy not inconsistent with friendship, 385; a regular New Year's guest, 388, 484; his philosophy found wanting by a youthful Punjaubee, ii. 43; vigour of, 186; philosophical opposition to, 187, 188; correspondence on absolute ethics, 242, 243, 249; his psychology based on use-inheritance, 268; frankness to, 408; plays fives with, 420; fondness for music, 422
Letters from—will not break through custom of sending him proofs, ii. 127; urges him to answer Lilly, 144; sends proofs to him as an "omnivorous reader," 145 (cp. ii. 419)
Letters to—his review of the *Archetype*, i. 161; *First Principles*, 212, 213; distention of birds' air-cells during flight, 214; animals and plants: Tyndall's favourite problem: "gynopathy," 230; fondness for music, 232; philosophy, 242; patience in discussions, 278; dry facts only at Edinburgh lectures: Moses and a visit to town, 445; on George Eliot and Westminster Abbey, ii. 18; thanks for his photograph, 47; acceptance of P.R.S., 53; on Creation controversy, 115; influence of conditions, 127; reads proofs of his Autobiography, 133; use-inheritance, *ib.*; disinclined to reply to Mr. Lilly, 145; the plot succeeds, 146; his own boyhood, 145; reply to Mr. Lilly: abuse of the word "Law": Victorian science, 146; Imperial Institute, 151; death of his daughter, 179; retrospect of their first meeting: clears up possible misunderstanding about London Liberty League, 183; a visit to, postponed: defensive position in controversy, 184; forgetfulness of past events: a sweeping criticism, 185; jests on his recent activity: himself unlike Samson, 194; some consolation for old age, 198 (*bis*); return from Maloja, 205
Sphinx Club, Liverpool, dinner to Huxley, i. 335
Spinoza, memorial to, i. 447; debt to, ii. 360, 426
Spiritualism, experiments in, i. 419; if true, an additional argument against suicide, 420; report on séance, *ib. sq.*
Spirula, work on, i. 399, 490, ii. 1, 344, 360 *sq.*
Spitzbergen, fossils from, i. 285
Spontaneous generation and Darwinism, i. 244, 331 *sq.*; recipe for, 333
Spottiswoode, William, and *x* Club, i. 256, 259; visit to, ii. 33; character of, 50; death, 51
Stanley, Dean, i. 314; handwriting, 453; death of, ii. 31; on George Eliot's funeral, *ib.*; men of science, *ib.*; on being made a bishop, 398; historical impressionability, 430; repartee, the priests and the prophets, *ib.*
Stanley, Lord, i. 155
Stanley, Lord, of Alderley, memorial to Carlyle, ii. 34

Stanley, Owen, captain of *Rattlesnake*, i. 24, 25, 27, 30, 47, 59
Stanley, Mrs. Owen, i. 54
State, comparison with the body, i. 358
State, the, and the medical profession, ii. 65
Steffens, Father, friendship with, ii. 205, 380
Stephen, Leslie, in Metaphysical Society, i. 315; on Huxley and his home life, ii. 433
Letter to—separation from friends: deafness: morality in the cosmos, ii. 381
Stephenson, G., i. 230
Stewart, Professor Balfour, editor of Science Primers, i. 360, ii. 2
Stocks, John Ellerton, i. 18, 63
Stokes, Sir G. G., i. 156; presentation to, at Liverpool, 335
Letter from — Parliament and the Presidency of the Royal Society, ii. 175
Letters to, ii. 175, 176 (cp. 173, 174)
Strachey, E., i. 258
Strachey, Sir R., appreciation of, ii. 391
Strauss, on the Resurrection, ii. 224
Struthers, Professor, visits, i. 408
Style, i. 215, 276, 297, 498, ii. 291; influence of his, i. 298; cannot judge of his own compositions in MS., 496; the first pages of an essay the chief trouble, ii. 147
Suarez, his teaching examined, i. 364
Suicide, moral, ii. 46
Sulivan, Captain, at Falkland Islands, i. 53
Sunday evening gatherings, 421 *sq.*; impression on friends, 422 *sq.*
Sunday Society, unable to support prominently while P.R.S., ii. 57
Supernaturalism, ii. 299
Sydenham College, i. 17
Sydney, projected chair of Natural History at, i. 76, 93
Sylvester, Professor, i. 139

Tait, Professor, reconciliation with Tyndall, i. 292; makes Huxley play golf, 363
Taylor, Miss H., criticism of "Administrative Nihilism," i. 368
Taylor, Canon Isaac, language and race, ii. 270
Taylor, Robert, Christianity compared to Bâbism, ii. 228
Letter to—success of Christianity and the story of Christ, ii. 228
Teachers, lectures to, i. 377 *sq.*, 476
Technical Education, address on, i. 473; continuation of his work on the School Board, *ib.*; Report to the Guilds, 474; engineers the City and Guilds Institute, *ib.*; supply of teachers, 475; speech at the Society of Arts, *ib.*; buildings, *ib.*; letter on his aims, 476; relation of industry to science, ii. 150; Imperial Institute, *ib. sq.*; letters to *Times*, 152 *sqq.*; campaign interrupted by pleurisy, 155; at Manchester in the autumn, 178-81
Technical education in agriculture, ii. 283
Teeth, writes on, i. 140
Tegumentary organs, article on, i. 140
Teleology, i. 456 *sq.*; *see also s.v.* Design
"Tenax propositi," i. 75, 131
Tenby, survey work at, i. 113; fossil forest at, 129
Tennessee, on the geology of, i. 465
Tennyson, "Ode on Wellington," i. 102 in Metaphysical Society, 314, 315 death of, ii. 337; visits to, *ib.* scientific insight of, *ib.*, 338; his talk, 338; insensibility to music, *ib.* on Browning's music, *ib.*; funeral *ib.*; poem on, *ib.*, 339
Letter to—thanks for "Demeter" envies his vigour, ii. 242
Tenterden, Lady, at Lynton, ii. 42
Tethea, on the anatomy of, i. 75
Theism, philosophical difficulties of, ii. 144
Theological doctrines, truth underlying, ii. 303
Theology, sentimental, ii. 303
Thompson, Archbishop, on modern thought and positivism, i. 299; and Metaphysical Society, 314
Thompson, Sir Henry, on Clifford's illness, i. 501
Thomson, John, surgeon on the *Rattlesnake*, i. 30, 32
Thomson, Joseph, description of Huxley's lectures at Edinburgh, i. 442
Thomson, Sir W. (Lord Kelvin), reconciliation with Tyndall, i. 292
Thomson, Sir Wyville, and Bathybius, i. 296; his course at Edinburgh taken by Huxley, 442, 456; criticism of Darwin, ii. 14
Thorpe, Professor, and new University scheme, ii. 312
Thought, as a "function" of the brain ii. 282
Times, review of the *Origin* in, i. 176
Title, rumoured acceptance of, ii. 69
Titles, for men of science, i. 359 (cp ii. 164)
Todd, Dr. R. B., gives up professorship at King's College, i. 107
Todd's Cyclopædia, writes for, i. 140
Tollemache, A., at *x* Club, i. 258
Tomes, Sir John, ii. 140
Toronto, stands for professorship at, i. 78-80, 100, 107

Training colleges, sectarian, ii. 156
Trevelyan, Sir C., Under-Secretary Treasury, i. 73
Treviranus, not studied by Huxley before 1859, i. 168
Trigonia, on the animal of, i. 75
Truth, transatlantic discovery of, ii. 44; Huxley a fanatic for, 46 (cp. 281), 404
Tug, story of, ii. 410
Tulloch, Principal, i. 372
Turner, W., an appointment to Calcutta Museum, i. 303
Tyndall, Mrs., letters to—duties of a married daughter, ii. 7; forgetfulness, 35; an invitation to lunch, 64
Tyndall, John, rejected, like Huxley, at Toronto, i. 79; Physics for *Saturday Review*, 139; joint paper on Glacier Ice, 144; joins School of Mines, 156; on Committee of the *Reader*, 211; in Wales with, 216, 224; takes Waverley Place house, 225; favourite problem in molecular physics, 231; and *x* Club, 257, 260, ii. 119; receives Edinburgh LL.D. with Huxley, i. 275; joins in drawing up scheme of science teaching in schools, 308, 309; in Metaphysical Society, 315; presentation to, at Liverpool, 335; discussion with B. Sanderson, 482; a constant New Year's guest, 484; action of Association of Liberal Thinkers, ii. 3; vigour of, 163; visit to, 287; death of, 368, 369
Letters from—unable to join in trip to the Eifel, i. 329; on clerical attacks, 336; on proposed visit to India, 355 *n.*; on opposition to his Presidency of the British Association, 401; wasted sympathy, 409
Letters to—Toronto, i. 79; elected F.R.S., *ib.*; on a London career, 114; science reviews in *Westminster*, 120, 121; letter from colleagues in England, 126; at his marriage, 129; the Brenon: end of Swiss trip, 146; on joining School of Mines, 156; friendship, 157; a "madcap" Alpinist, 160; on Jamaica affair, 282; on workingmen's lecture at British Association: reconciliation with Thomson and Tait, 292; resignation of Fullerian lectureship, *ib.*; resigning lectureship at School of Mines, 304; Liverpool British Association, 313; an electrical disturbance, 330; his lecture at Liverpool meeting of British Association, 336; a letter to *Nature*: his breakdown, 365; trip to Egypt: ascent of Vesuvius, 371; the new teaching of biology: Hooker's affair, 379; ill-health, and the fine air of St. John's Wood: Tyndall's visit to America, 382; a loan, 386; possibility of marriage, *ib.*; the New Year in the new house: Tyndall's "English accent": character of Hirst: Lord Rector of Aberdeen, 388; tour in Auvergne, 394; controversy about Forbes: walks with his young son: receives Order of the Pole Star, 395; opposition to his Presidency of the British Association: a letter at high temperature: Blauvelt's "Modern Skepticism," 401; the Forbes controversy: British Association at Belfast, 409; excuses for undertaking unnecessary work: subject of Belfast address, 410; Spinoza memorial: pay at Edinburgh: possible sons-in-law, 447; examines micro-organisms, 449; offers to lecture for: "bottled life," 484; on his daughter's recovery, 493; to take Boyle in English Men of Science Series, 500; own capacity as an editor: Clifford's illness, 501; begs him to avoid "avalanches of work," 502
Friendship and criticism, *apropos* of science review in *Nineteenth Century*, ii. 17; a confession, 61; dinner in honour of, 166, 167; Lord Granville's sarcastic sweetness, *ib.*; confused with him in the popular mind, 258; Tennyson's funeral, 338; effect of influenza: addresses at Oxford: dying by inches, 356

"Universities, Actual and Ideal," i. 405 *sq.*
University, Johns Hopkins, address at: "Trustees have sometimes made a palace and called it a university," i. 465, 466; ideal of, ii. 308-11; government by professors only, 312 *n.*
Use-inheritance, disbelief in, ii. 268; in plants, 269.

Variation, the key to the Darwinian theory, i. 227
Varigny, H. de, letters to—his essays translated into French: love of his native tongue, ii. 290; later volume not interesting to French public: experimental proof of specific infertility, 291
Vermes, a zoological lumber-room, i. 59, 131
Vestiges of Creation, i. 167, 168
Vesuvius, ascent of, i. 372

Virchow, Professor (in Huxley lecture), influence of the *Rattlesnake* voyage, i. 55; on Huxley's ethnological work, 198; at Medical Congress, ii. 33
Vivisection, i. 427 *sqq.*; Lord Shaftesbury's charges, 428 *sq.*; W. E. Forster and South Kensington lectures, 430 *sq.*; personal feelings on, 434, 439, 440; Bills, 436 *sq.*, 440; fox-hunting legislators, 437; experiment and original research, 438; Commission on, 439; Harvey article, 484, 488
Vogt, Karl, i. 164
Von Willemoes Suhm and Ceylon Museum, i. 375

Wace, Dr., attacks agnosticism, ii. 221 *sq.*
Wales, H.R.H. Prince of, admitted to Royal Society, ii. 39; unveils Darwin statue, 112
Walker, Alfred, letter to—local museums, i. 136
Walking, his holiday recreation, i. 144, 224, 225
Wallace, A. R., starts Darwin, i. 159, 165, 170; Civil List pension, ii. 14
Letter from—friendship with Huxley, ii. 409
Waller, Mrs. F.W., letters to—numbers at Edinburgh lectures: suggests a new friend, i. 444; Afghan War of 1878: Indian Empire a curse, 488; avoidance of congresses, 494; acceptance of F.R.S., ii. 53; portrait at the Royal Academy: family news, 63; loss of her child, 128; a Christmas function, 432
Walpole, Sir Spencer, ii. 20 *sq.*, 29; on Huxley as Fishery Inspector, 22-27; kindness from, in Italy, 99, 101
Walpole, Sir Spencer H., Vivisection Bill, i. 436
Ward, Dr., his former examiner, passed over in favour of Huxley for Royal Society, i. 96
Ward, T. H., visit to, ii. 241
Ward, Mrs. T. H., letter to—thanks for *Robert Elsmere*, ii. 193
Ward, W., table-talk of Huxley, especially on the *Foundations of Belief*, ii. 395; other reminiscences of his talk, 428, 430
Ward, W. G., in Metaphysical Society, i. 314, 317, 320, 321; saying about Mill's opinions, 323
Warwick, lectures at, i. 154
Water-Babies, The, i. 191; letter to his grandson about, ii. 436
Waugh, Rev. Benjamin, imp[illegible] Huxley on the School Board, [illegible] *sq.*
Welby, Lady, letters to—life compare[d] to a whirlpool: human tendency t[o] make idols: "devil's advocate" t[o] H. Spencer, ii. 67; speculation an[d] fact, 163; truthfulness in scienc[e] and religion, 212
Welcker, Dr. H., on his ethnologica[l] work, i. 273
Weldon, Professor, letters to—ideal of [a] modern university, ii. 308; organ[i]sation of new university, 315
Wellington, Duke of, funeral, i. 102 on speaking, 297
Westlake, John, Q.C., a working-men's meeting, ii, 410
Westminster Review, writes for, i. 85 119, 214
Whales, i. 276
Whewell, *History of Scientific Ideas*, i 154
Wilberforce, Bishop, on Darwinism, i 179-81, 183, 185, 186, 188, 189 196, 201, 221
Winmarleigh, Lord, on Vivisection Commission, i. 439
Withers, Rachel, mother of T. H. Huxley i. 1. (*See* Huxley)
Witness, the, on the Ape question, i 193 *sq.*, 196
Wollaston, T. V., and species, i. 169
Women, medical education of, i. 387 389; in public life, ii. 387
Women's education, i. 211, 262, 417
Woodward, S. P., and geological amateur, i. 275
Working-Men's College, i. 138 (Lectures. *See* Lectures); ii. 1; address at, on "Method of Zadig," 13
Working-Men's Institute, i. 473
Wright, Dr., editor of *Natural History Review*, i. 209, 252

x Club, founded, i. 256; history, 259-61; compared to The Club, 259; jealousy of, ii. 112; gaps in, 119

Yale, fossils in museum, i. 461 *sq.*, 469
Youmans, Dr., at *x* Club, i. 258; meeting with, i. 284
Young, Lord, dines with, ii. 29
Yule, Commander, succeeds Owen Stanley, i. 55

"Zadig, Method of," ii. 13
Zoological Gardens, i. 473
Zoological Society, i. 98

Printed by R. & R. CLARK, LIMITED, *Edinburgh*

(HTP)

00022886

Digitized with financial assistance from

HT Parekh FOUNDATION

An Initiative by HDFC

WITH YOU, RIGHT THROUGH

on 28 December, 2018